Nature Calendar

APRIL

I wandered lonely where the pine-trees made
Against the bitter East their barricade,
And, guided by its sweet
Perfume, I found, within a narrow dell,
The trailing spring flower tinted like a shell
Amid dry leaves and mosses at my feet.
—WHITTIER.

"April showers bring forth May flowers," so runs the homely rhyme of the old-time country folk. And in truth there is nothing that seems quite so life-giving as a warm rain in April, when all the earth is filled with springing vegetation, awaiting only the warming sun and moisture from above to encourage it. The sun breaking through the clouds of an April shower seems truly like smiles following tears.

The marsh marigold, or cowslip, makes its appearance in the wet meadows, growing in water so icy that one marvels at its ability to survive the frosty nights. We wonder if anyone nowadays gathers its succulent green leaves for "greens" as was a common custom in our boyhood days.

What a wild sound is the drumming of the ruffed grouse. There is something weird and mysterious about it. It seems more like the voice of a tree, or the greeting of some god of the glen, than a sound made by a bird. Whether one be near or far, there is little difference in its volume. If this bird be destroyed in our woods, no sound made by alien substitute can ever fill its place in our hearts.

In the moist meadows, and even in waste fields, the delicately tinted flowers of the bluet *(Houstonia)* spread over the ground. Many persons have mildly wondered how thickly they grow, but wondering did not satisfy Thoreau, and he found about three thousand on a square foot.

Now comes back the sapsucker, and with glad cries seeks out the site of last year's nesting. Vocal exultation is not enough, so he beats his curious halting tattoo on a dry branch. The drumming of most woodpeckers is a regular roll, but this gay cavalier is not content with the conventional, so greets his lady with a serenade that, though seemingly hesitant, still proves as successful as the sweetest warbling of more ambitious songsters.

At this time the snipe, first cousin to the woodcock, begins his "winnowing" high in air over the marshes. Early in the morning or in the late afternoon are favorite times, but on cloudy days one may hear it at any time of the day. It is a rumbling sound, redolent of open spaces and dizzy heights, and is the greeting of the male bird to his mate. Truly, love stories may be told in various languages.

If you would drink to the full the beauty of an April morning, seek out some spot in our northeast where a grove of century-old white pines rear their trunks aloft, with upper branches almost meeting in a green canopy. The warming south-borne wind, stealing through those needle-studded sprays, sings such a song as may be heard nowhere else on earth. High in air a pair of red-shoulders, the singing hawks, swoop and dive with joyous cries, intent on that huge ancestral nest in the high, stout fork. The blue sky above is barely flecked with fleecy clouds, like watermarks on sheen of azure silk. The sparse undergrowth shows only the faintest hint of green, and the swamp maples are bedight with gay blossoms. Then may we hear at its best the rolling trill of the pine warbler, now frequenting the lower strata of the forest, but soon to build its nest far out on lofty branch. Yes, it is good to be alive on such a day in April.

In the far north, April brings a picture different from the landscape of gentler climes. Most of the snow has melted under the warm sun of the rapidly lengthening days, save that in the deeply drifted shadows of the evergreen forests, or in wind-driven ravines, the hard-packed crust still prisons the earth. On the broad lakes and rivers the thick ice gives yet no hint of breaking. No tinge of green shows on the twigs of deciduous trees, but the poplars and alders are browning the slopes with their swelling buds. Still, the mourning cloak butterfly has crept out from its winter den, and flits in the warm sunshine. Among the birds, only the large owls and the eagles, and the boding raven, and the familiar jay, have begun their nesting. The earliest of the mosquitoes have ventured timidly forth, and the snow-water rivulets are blue-black with the hordes of snow-fleas. The earlier of the small bird migrants, the snow buntings, the longspurs, and the more hardy woodpeckers, return from the southward. Compared with April as most of us know it, the prospect may seem cheerless, but April of the north is well appreciated, for it comes to a land that since October has known no bare ground, has seen no water save that gained by sinking a shaft through ice, and where for weeks even the midday sun gave no appreciable warmth.

Prepared for Nature Magazine by Edward A. Preble

PHOTOGRAPH BY THE FINLEYS

THE BULL SEAL GUARDS HIS HAREM AND PUPS

He invites no intimacy from the visitor and the better part of wisdom is not to tempt his anger.

NATURE MAGAZINE

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PROVISO TOWNSHIP HIGH SCHOOL MAYWOOD, ILL.

"Sure, afther all the winter,
An' afther all the snow,
'Tis fine to see the sunshine,
'Tis fine to feel its glow."
DENIS A. MCCARTHY

CAMERA HUNTING IN THE NORTHLAND

By WILLIAM L. FINLEY

(The Third Article on the American Nature Association's Expedition to the Treeless Islands of the Bering Sea.)

CHAPTER V—FORBIDDEN ISLANDS

"MEET St. Paul of the Pribilofs," drawled the Captain from the door of the galley, as I came on deck and was greeted by green slopes and a little village peeping out from under cover of that high fog which always shields these northern outposts from the summer sun. I expected the fog, for I knew this was a reason the fur seals had long ago taken the Pribilofs for a home.

Bobbing out from the shore to meet us, came something that soon took the form of a large lifeboat manned by native Aleuts and piloted by Mr. Christoffers, Superintendent of the island. He had come to take us ashore. In truth, we were to be guests of honor, for only those who have special permit from the Bureau of Fisheries of the United States Department of Commerce are allowed to land on the island. Once a year the supply boat furnished by the Navy Department carries a year's store of provisions to the Pribilofs and departs. Aside from this contact with the world, the *Eider,* a small boat belonging to the Department, occasionally goes from Unalaska to St. George and St. Paul, the two largest islands of the group, and sometimes a cutter from the Coast Guard Service glances across at these fog-bedecked islands, as it passes in the patrol of the Bering Sea.

In October or early November the northern winds, laden with snow and ice, blow a cover of complete isolation over these outpost islands; and from that time until the breath of the south breaks the frozen blockade, they are as far off as Mars, except for the naval radio and its crew of men who hold converse with other outpost stations across the sea. On St. Paul and St. George live two or three hundred native Aleuts, each island being supplied with a government physician, school teacher, store keeper, and a superintendent in charge. It seemed to me that the few white men and women with their families who pioneer on these far-off outposts require courage and endurance, for during the long winters their island homes are swept by the continuous icy blasts of the north.

PHOTOGRAPH BY THE FINLEYS

THE ALEUTIAN ROSY FINCH
He plays the part of the sparrow of the North, nesting in the cliffs.

Camera equipment and a few personal articles were tossed into the boat, which was soon pushing through a mat of kelp and nosing toward a shoreline covered with huge, round boulders. With a westerly wind, we could land from this side; with an easterly wind, an approach could be made only from the other side. Willing natives carried our equipment to the government house where we were lodged in comfortable rooms.

Accustomed to living on a farm, I quickly noticed a large barn stored with hay and feed. I thought that the wild grass that grew abundantly on the

PHOTOGRAPH BY THE FINLEYS

MURRES NESTED IN CLOSE FORMATION
These strange birds are one of the most fascinating studies in northern bird life.

island had been cut and stored for winter, but I learned later that the season is too short for hay to cure, and it must be imported with the other provisions.

As we topped the ridge, the sight of seals met our eyes. Crowded along above the wave-washed shore line, the whole slope seemed to be covered with brown-looking rocks that came to life and wobbled. In my eagerness for a picture, I approached an old bull perched on a rock, and started cranking my camera. Suddenly there came a sound like the muffled chugging of a gas engine, and Mr. Seal, puffed up in rage, flopped humping toward me like a fellow in a sack race with his feet tied. Widely opened mouth, lined with sharp teeth, backed by energy that meant business, forced me to a hasty retreat.

"Don't go too near. He'll bite your leg off," yelled the guardian of the seal colonies. "An old bull seal selects his home site and his harem, and guards it with his life. Anyone that approaches is to him just a rival bull who wants to steal his wives."

The aim of the government is to protect the seals on the island during the breeding season, for here on the Pribilofs is the greatest colony of fur-bearing animals in the world. In the old days of Russian dominion, the fur seals of the Pribilofs were a most valuable resource. After the United States bought Alaska with its many outlying islands, it was the custom of hunters to pursue and kill seals—males, females, and young—in the open ocean, so that after years of such indiscriminate killing, these animals were reduced to the point of final disappearance. Then, after a long delay, our country, England, and Japan entered into a treaty abolishing seal hunting and entrusting the United States with the guardianship of the fur seals. Since that time, the seal rookeries have been handled very much as an intelligent farmer cares for the domestic stock on his land.

A LEAST AUKLET
They are always in danger from the foxes.

The guard who was standing by my side explained how each bull had gathered about him cows, ranging in number from five to a hundred according to his favorable location on the beach and to his fighting prowess. Anything that might stampede the rookery would cause destruction among the little black baby seals, called pups, that were scattered helter-skelter among the rocks. As a rule, people are not allowed to disturb the animals at this season, but I was given special permission to edge up close enough to get intimate views. I soon discovered, however, that it was I that needed a guard, not the seals.

Down the rocky slope at the edge of the rookery a mother seal fanned her pup with a ludicrously swaying flipper. While keeping a sharp eye on the old bull, half asleep in the sun, I had not noticed another monster behind a rock farther up. Suddenly he charged and cut me off from retreat. I left the camera standing and dodged behind a huge boulder, only to find myself literally between the devil and the deep sea. Just as I was wondering how I was going to get out with both legs whole, the master of the lady I was photographing discovered the rival bull in his own harem. With a roar he galloped to the fray and a terrific

PHOTOGRAPH BY THE FINLEYS

A PAIR OF PAROQUET AUKLETS
The largest of the three species of auklets found on the Pribilof Islands of St. Paul and St. George.

PHOTOGRAPH BY THE FINLEYS

THE GULLS WERE EVERYWHERE FOUND
They were the constant companions of the expedition wherever it wandered.

PRIBILOF SANDPIPER
Out on exploration but always on guard.

fight followed. My camera was in imminent danger, but the guard grabbed it and we escaped together in the melée.

Safe once more, I sat down on a big boulder above the rookery, listening to the continuous bleating of pups and bawling of cows. I could have closed my eyes and imagined I was in the midst of a big herd of sheep, but the puffing or huffing of the bulls and the warning roars were as foreign to any domestic flock as were the rush and pound of the Bering Sea breakers on that rugged northern shore to a meadow scene at home. I thought of the marvelous ingenuity that Nature uses among her many kinds of animals. Here below me were the fur seals, gathered from the four corners of the wide Pacific Ocean. They set flipper on these islands only during the summer time, for the purpose of breeding. The bulls arrive first from the southern waters and take their places some thirty to fifty feet apart. The females come later and select their own masters. Once a lady seal has taken unto herself a husband, she is under his power and dominion for the season. With little sleep night and day for two months, and without a bite of food or water during this time he charges to tear at the throat of any rival bull who chances to come too near. If any wife shows the least quality of fickleness and seems too inclined to waddle away, he lurches at her with a roar to strike terror in her soul. If the threat is not sufficient to curb her, he seizes her by the scruff of the neck and hurls her bodily back among his consorts. In size he is five times the weight of any one of his wives, and he has a strength and power to prove that might is right.

PHOTOGRAPH BY THE FINLEYS

A VILLAGE IN THE FAR CORNER
These far-away Pribilofs are home to a few hardy Americans and a few hundred Aleut natives.

PHOTOGRAPH BY THE FINLEYS

YOUTHFUL CITIZENS OF THE PRIBILOFS
A group of Aleut boys to whom the coming of the Americans has given many advantages.

The bull fur seal does not come to breeding age until about six years. The female is mature the second year and gives birth to a jet-black pup by the end of the third year. Nature has equipped the mother seal with two reproductive organs. In this way she starts having another baby almost as soon as she gives birth to her first. I know of no case of a seal having twins, however, and have not heard of one.

Returning to the village in a drizzling rain late one afternoon, I rounded the corner of an old building and bumped squarely into Santa Claus. His rotund figure showed a six-inch gap between the bottom of his gray sweater and the top of his trousers, and it was plain to see that no feathered pillow rounded out his form. A long, gray beard, a tousled gray head topped with a little narrow-rimmed hat, and the most genial smile in the world made me feel that surely this was the famous gentleman in person.

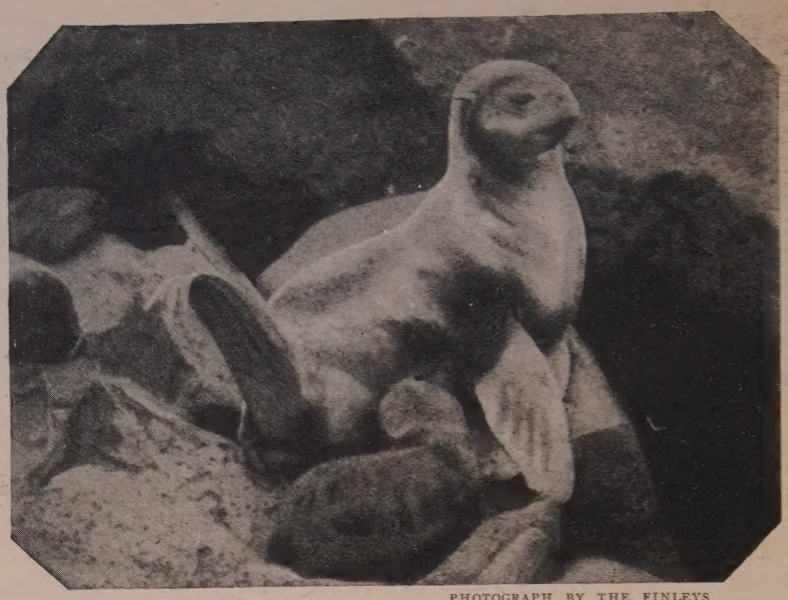
"Hello, do you live here?" I gasped, resting the tripod on the ground. He gave a genial grunt and with a sweep of his right hand said something I couldn't understand. "Do you speak English?" I continued, rather embarrassed at the thought of asking Santa Claus such a question. The conversation that followed was a rapid movement of arms and hands, interspersed with broad smiles which all the world can comprehend. Here we stood beside the old Russian church. He was not Santa Claus after all, but the priest stationed there to administer to the native Aleuts; and shouldering my tripod I went

PHOTOGRAPH BY THE FINLEYS

THE BLUE FOX EYED US BOLDLY
After much care in not scaring it with the camera, the fox refused to be startled.

on my way, rejoicing that here on St. Paul the boys and girls had a Santa Claus of their own who wore a perpetual Christmas look and spirit.

Bursting up from a field of flowers, like a blossom suddenly taking wings, flitted a black and white Pribilof snow bunting, scattering a series of rollicking notes. There were no trees on which he might alight, but he trembled aloft above his home and perched as if on an invisible bough, with spreading wings, pouring out his notes. Wavering earthward like a snowflake, his song ended thirty feet up, his wings closed, and he shot down to the cover of the Arctic poppies. An Alaskan longspur, another songster, took up the strain; and then another in a chorus I shall hear as long as I live. Songs, like smiles and laughter, take these avian people from the flowery feasts of summer through the dry crusts of winter, so closely does the joy of summer tread upon the heels of the winter's sorrow.



PHOTOGRAPH BY THE FINLEYS

THE BABY SEAL PHOTOGRAPHED AT LUNCH
The mother seal devotes herself to her pup at the expense of herself until it is strong.

Chapter VI—The Foxes of St. George

The wind had veered to the east; the *Westward* had been compelled to change her anchorage. We couldn't see her, but she was perhaps off the west side of the peninsula. We bundled ourselves into the big bidarrah or skin boat of the natives; and, as the oars rattled steadily back and forth, St. Paul gradually disappeared into the fog. Presently, however, the *Westward* came

PHOTOGRAPH BY THE FINLEYS

A BULL SEAL AND THE SEAL COLONY
They were carefully guarded to prevent stampeding lest some of the pups be injured in the rush for safety.

rolling up out of the ocean. We clambered aboard against the pitch of the waves and just before dusk, the fog lifted a bit and showed the dark outline of another rocky shore, St. George.

The gateway to this second forbidden island could not have been better designed by Nature to discourage the faint-hearted. A jagged reef lies low along the front where, even in calm weather, the rollers from the Arctic gain their momentum over many hundred miles to tear in white rage at this rocky approach. Straight toward destruction our bidarrah rowed, but stopped just short of the reef, while the biggest breaker of them all spent itself in a shower of spray. Then, with straining backs, the Aleuts bent to the task and we slipped past the end of the reef and into smooth water behind this barrier.

We were soon as pleasantly located in the government house as we had been on St. Paul, and I wasn't long in discovering that rare blue foxes wander about the back yards and along the village walks at St. George

PHOTOGRAPH E. C. JOHNSTON

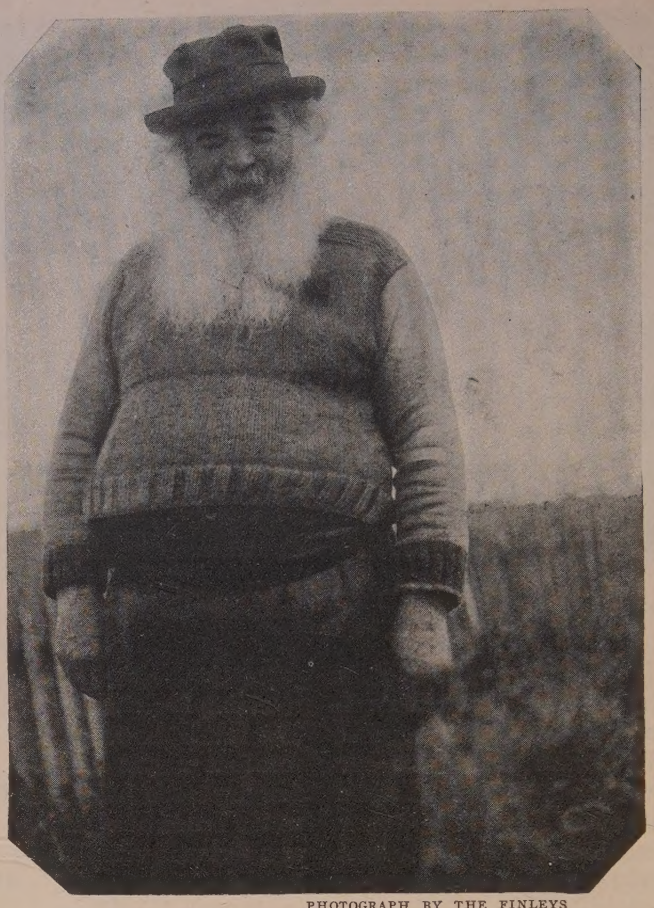
THE FOX PUP SHOWS HIS ANCESTRY
Now and then the white fur of his forbears is mingled with or dominates his blue coat.

like town dogs at home. No real dogs are allowed on the Pribilofs, and this rule is strictly enforced to prevent disease and contamination of the pure-bred, royal fox strain on the island. This is a sad blow at the youthful Aleuts' love of pets, but St. George is not totally without a pet, for one black and white cat makes up the entire feline population. Poor pussy, one might say, with foxes surrounding her village and with but one flag-pole to climb. The fact is, however, that Tabby is a nightmare to every fox that crosses her path. At her near approach, every fox hunts his hole; and I noticed that even the mother with a brood of eight pups under the school house ranged at a distance when Tabby sat on the steps. Perhaps the lack of dogs in the little Aleuts' life was more than made up by the bumping of little heads against the wooden supports under their school room, as the young foxes played. I noticed that the other buildings in the village had wire netting about the foundations to keep foxes from burrowing underneath and setting up their homes.

PHOTOGRAPH E. C. JOHNSTON

A YOUNG HAIR SEAL
These interesting mammals are also to be found on the forbidden islands of the Bering.

The blue fox of the Pribilofs that ranges over both these large islands is of a different race from the common red fox; his face is more dog-like. They were rather ragged-looking animals just at that time, on account of being occupied in a change of clothes, shedding their old worn fur and getting on a new winter coat. The white fox of the Arctic has a winter coat of white which changes in summer to dark brown on the back and shoulders and tawny below. Many years ago it is very likely that this was the appearance of most of the foxes living on the Pribilofs, but being isolated for generations on these far-off islands, the white strain has been largely eliminated, and they have been described as a separate race. Practically all these foxes change from sooty-gray in summer to a bluish-gray in winter, thus earning the common name of blue foxes. Occasionally, however, one sees a pup of mottled color in a litter, showing that his coat harkens back to the more typical coat of his ancestors. White and blue foxes are not different species, therefore, but merely represent two color-phases of the same animal, just as a black bear may sometimes come into the world with a brown coat.



PHOTOGRAPH BY THE FINLEYS

AND THERE WE FOUND SANTA CLAUS
But he spoke only Russian and presided over the Aleut church on St. Paul Island.

Back of the village the land sloped away toward a high rocky hill with the summit nearly a thousand feet above the ocean. The slope was strewn with rocks, between and over which spread a mass of moss and rank vegetation. We had not gone a hundred yards from the village before we came upon two fox dens. A mother watching at the door disappeared within the depths. I stooped to look in and a trail of feathers met my gaze. I picked up two wings that told of least auklets she had caught, while from back under the rocks came the gutteral, warning bark of a mother fox telling her pups to lie low in the face of danger. There were half a dozen entrances, showing that tunnels ran helter-skelter under the big rocks. We had no blind to hide the camera, so I set it up in the open thirty feet from the den, and slipped on the six inch lens. Then I lay in the grass to wait. Perhaps the parent foxes would go out and bring in a bird or better still the pups might come out to play. Alas, foxes have an exasperating way of sleeping in the den or lazying around out of range during the day, waking up to hunt and play only when evening comes and the light is too poor for pictures.

Even so, I fooled an old fox one day. I saw her lying on guard at the front door of her home. I didn't go toward her, but stalked along over the boulders with all my attention apparently centered on taking a photograph of a rock fifty feet away. I worked hard on that rock for half an hour. Then I hunted for another rock that was nearer. Not once did I look at the fox or let my eyes turn in her direction, although with a little mirror I could watch her eyeing every move I made. At last, when I was near enough, I kept my back toward her, but focused the camera and took her picture while she thought I was still photographing a rock. And yet, perhaps I was the one fooled, after all. When I had used most of my film-taking pictures at thirty feet, I looked her in the eye and moved the camera ten feet nearer. She merely sat up boldly and watched me, and finally yawned, as if waiting for her picture had really been a tiresome matter.

PHOTOGRAPH E. C. JOHNSTON

BLUE FOXES IN WINTER
They are as common in the villages of St. Paul and St. George as dogs are at home.

Toward evening a strong

wind sent a drift of fog from the south. We sat on the dge of a high cliff facing north to watch the return of ne least auklets that live in a great colony among the oulders. These little sea fowls, called by the Aleuts choochkies" (pronounced chewtskie), are plump in ody, but not much larger than an English spar- ow. You see them sitting on the rocks of the oulder beaches, bowing and chattering. Having neir legs at the end of their bodies, they prop nemselves upright on their little webbed feet and valk around like little old men. During the day they eed off at sea, and now we were watching the flocks re- urning home. Out at sea a band of from fifty to two r three hundred would beat along into sight, driving low ver the water against the wind. When near the island nder the lea of a cliff, they rose just high enough to lear the top, and swished past our ears like the sound f a whip drawn quickly through the air. For an hour lay low in the grass with watch in hand and counted ock after flock in rapid succession passing at the rate f six hundred to several thousand birds a minute. At mes I could have reached up and grabbed birds out of ne air. Occasionally, as a flock—perhaps tired after ne long flight—lifted just over the rim of the cliff, a trong gust would hold them as against an invisible wall. Down the flock would sink again in the protection of ne cliff and swing along to storm the barrier at another oint on their homeward flight. We were not the only vatchers, for at the edge of the cliff the keen eyes of fox were only half hidden among the grass.

The birds that live on these northern islands are lways on the firing line. There are three species of uklets, of which the choochkie is the most abundant. The paroquet auklet—a little larger than the least auklet —is called "Baillie Brushkie" by the Aleuts. The crested uklet—called "canooskie" ("little captain")—is well amed, because he has a queer little crest of feathers hat sticks out of his forehead and curves around toward his nose. All of the auklets find homes in the crevices of the rocks where foxes find most difficulty in reaching them, but in going to and from their homes the birds must ever be alert. Little sandpipers ply the shore lines, probing for food—Pribilof sandpipers. The snow bunting and the Alaska longspur sing above the flowering slopes and the meadows.

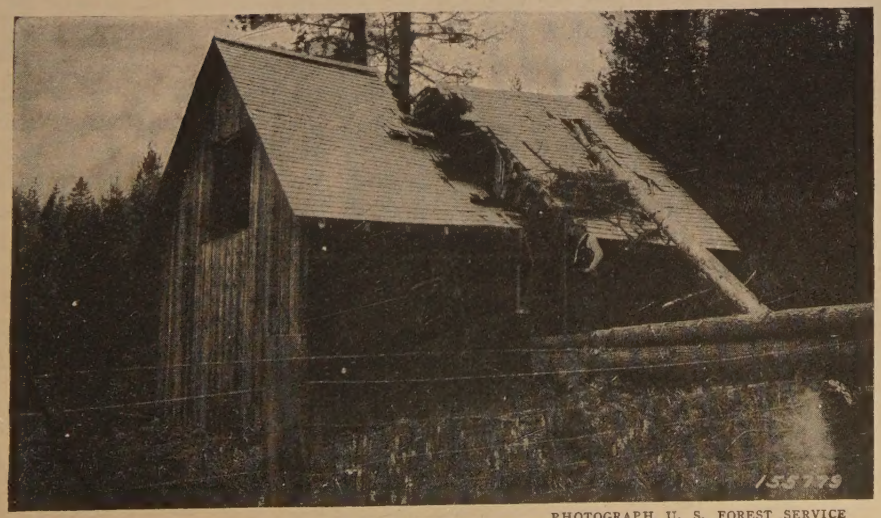
The beautiful Aleutian leucosticte or rosy finch plays almost the part of an English sparrow in the villages on St. George and St. Paul. He chatters from the roofs and lives about the barn and the back doors, but he takes himself off to a crack in the cliff to nest. Last and least is the little Alaska wren, tiny like our winter wren at home, in size and song perhaps the most striking bird character of the North. He, too, must find a home in a crevice of a cliff. With the heart of a Viking, he braves the northern winter and is affectionately called "Limmershin" (chew of tobacco) by the natives.

With all the birds on the island, it is a case of the survival of the fittest. A fox may be crouched behind every brown rock or green tussock of grass. The village hen yard is well guarded with a six-foot wire netting, but I saw a fox just outside watching with eagle eye the doings within. Biddy's wings do not have to be clipped to keep her from flying over, even in spring time. She inherits no desire to scratch in neighboring gardens. One evening at feeding time the gate of the henyard was accidentally left unlocked. The next morning St. George had not a single chicken left, and the foxes looked surprisingly plump.

Leaving St. George was harder than leaving St. Paul. The winds were veering. I hoped that they would drive hard from the north and make it impossible to pass the reef barrier, so we would have to stay ten days or two weeks longer, for St. George fairly bristled in interest every way I turned. However, the natives manned the life boat. A huge breaker shattered across the reef. We shot across the rip, off for other adventures.

The Barn Couldn't Dodge

HOUSES and ships are often cut in two by the ingenuity of man, but it is seldom that Nature, unassisted, performs a clean-cut job of this character. This farmer built his barn too close to heavy timber and a gale uprooting two large trees sent them crashing through the structure, the second tree following the first through the gap in the roof of the barn and completing the work of destruction. The farmer, seen standing on the tree trunks, is evidently trying to figure out whether it would be best to repair the old barn or build a new one in some safer and unwooded location.



PHOTOGRAPH U. S. FOREST SERVICE

HINTS and HELPS for HOME and GARDEN

April

THE United States Government says that every toad is worth $24. Therefore a wise gardener will protect the toads. Toads are the night watchmen of the garden and are busy devouring cutworms and beetles which hide during the day. Birds carry on the insect war during the day and toads by night.

An ice pick will prove very useful in the spring war on dandelions. By puncturing the center of each plant and pouring a few drops of gasoline into the heart of it, you will find that your effort will discourage further growth.

In sowing fine seeds, mix them with dry sand to avoid planting too thickly. All hardy perennials do better if sown in the spring than later on in the summer. This gives them a longer growing season and the young plants will be stronger and better developed before cold weather sets in.

Before the buds start to open on the roses, spray them with a solution of lime and sulphur, to forestall the later appearance of mildew and black spot. Make a trench around the tea roses and put into it a handful of bone meal. Lime and sulphur may be purchased from seedsmen with full directions for applying.

The tea roses must be pruned back to remove wood injured by the winter. They can be pruned to within a foot or so from the ground, but remember that the hardy roses are larger and need not be pruned so severely.

If you enjoy colorful flowers in winter, plant the Hilichrysum or straw-flower now. Put the seeds in a shallow box early in April, and as soon as danger from frost is past, set the young plants out in the garden. They will bloom early in the summer and can then be hung upside down and dried for winter bouquets.

It is far easier to destroy the small tent caterpillar nests before the young caterpillars become too active and too large to make the job a pleasant one to perform.

To force the rhubarb, place a half barrel over each plant and it will produce long, delicately-flavored stalks.

Birds are not highbrow in their tastes. The top of a waste can placed on some bricks and filled with water will attract just as many birds as will a beautiful marble bird bath. Get the birds accustomed to coming to your garden for a drink and a bath and they will repay you by helping you fight harmful insects. Don't begrudge them a few juicy strawberries as a reward.

Is your dog beginning to be uncomfortable and is he leaving a trail of hair on all the furniture? Help him in his task of ridding himself of his winter coat by giving him a thorough combing every few days. Incidentally, your clothes will be freer from his hair.

In constructing bird houses, be sure to provide a means of opening to clean them out at the end of the year. Never place the hole too near the bottom as this would not leave room for the nesting material.

Rake the dead summer grass out of the lawn and sow grass seed on the bare places. Fill up the holes, resod where necessary and roll it. Prepared humus may be bought and mixed with the grass seed to be sown, or a thin layer may be scattered on top before rolling in the new seed. You will be surprised by the improvement of your lawn.

It is cheaper and easier for the home grower to buy onion sets and tomato plants than to waste precious space and time in growing them.

The sash of the cold frame or hotbed must now be raised on warm days to give the plants air and get them used to being out of doors. Remember, however, that the nights are still cold and the sash should be lowered again at sunset. Continue this "hardening-off" process until the plants are ready to be set out.

House plants which are through blooming will require less water. Now is the time to take cuttings of the geraniums and begonias and root them in a pot of moist sand, later on transplanting them to a permanent pot of rich earth.

Leaf mold and sand mixed with garden soil is the best for filling the window and porch boxes. This soil must be rich but not too heavy or full of clay. If you haven't leaf mold, prepared humus is very effective.

Wild flowers will not thrive in a clay soil. If you have a wild garden, mix the soil with plenty of leaf mold or humus and lighten it with a little sand. Most wild flowers do not do as well in a mossy, sour earth as in rich, light forest soil.

Soak the hard dry seeds of the sweet peas for twenty-four hours before planting and you will find that they will germinate much faster. Work the soil well.

(Continued on page 255)

Trixie Goes To School

By Josephine Z. Rine

PHOTOGRAPH WIDE WORLD

DID you ever hear the story of the little Gordon setter who, when told to fetch a fifty-cent piece from the bottom of the pond, dove and returned with a string of fish and thirty-five cents change? I confess that I did not see it done, but, taken with a sense of humor, think what superior intelligence that setter must have had, and what wonderful training as well.

It requires both training and intelligence for real accomplishment in tricks. The dog is endowed with the bedrock of intelligence upon which to build, but the master holds the key to performance. This key will work only in combination with time and great patience.

"Which is the brightest breed?" the dog-owner asks. Which will pay best for the time consumed? There is no brightest breed because individuals rather than races differ in brain power, and because certain puppies are more fortunate than others in having teachers with patience and common sense. There are bright and dumb in every breed, but even dogdom's dunce is no dunce at all.

For years the mongrel has enjoyed a reputation as the brightest pupil, but this is coincidence rather than fact. Mongrel or not, the dog's master picked him out, no doubt, because he was so much more precocious than his brothers. Perhaps he was the first to fall out of the nest in his desire to find out what was going on in the world beyond his box or, perchance, he chewed things to tatters long before his brothers discovered the joys of destruction. Or it may have been a little Pandora who was the first to scent the trail across milady's bureau at the expense of perfume and rouge; to taste the lace curtains; to plague the gold fish or to bark at the parrot until he swore. Oh my, but life was good and spankings plentiful! Nevertheless, here was brain power, wicked and destructive, to be sure, but here, too, was the nucleus of the star pupil.

"SIT UP" IS EASY
This command can be learned quickly in its regular sequence.

The first requisite for training is confidence in the master. Puppies are born with it and it is the only sound foundation upon which to build. The little fellow just out of the nest will run toward a kind voice and away from a cross voice. Try it and find that confidence, plus the spirit of play, are the tools ready at the hand of the skillful teacher.

Giving orders to the beginner, use as few words as possible, choosing always the same words of command. To say at one time, "Go to bed," and the next time, "Get into your box," is confusing and taxes the little pupil unnecessarily. "Go to bed" may be repeated as the youngster is seen to be headed in that direction. Every time he seems disposed to drag his toys to his bed for a good old chew,

advantage may be taken to use the formula again.

There are only a few lessons that may be taught safely during the first months of life because the puppy is just a baby then. His backbone is not strong enough to stand the rigor of the upright tricks. He is not fully matured until at least the fifteenth month, and too much cannot be expected of him before that time.

A TRICK THAT SLIPPED
The order was, "Fetch your ball," but an orange was brought back instead.

The first command, "Come here," is easily taught by taking advantage of the little one's delight in the master's return. As he runs toward you, call, "Come here," plainly but quietly. Tousle him a bit and act as if you are glad to see him; jolly him, and before he is old enough to know why, he will stand ready to sell his little soul for you. Many a dog that stubbornly refuses the order, "Come here," will fall for the greeting, "C'mon, old top." It is a matter of deciding on the particular disposition at hand. The timid ones will require jollying and the fresh and boisterous ones a firmer tone.

The youngster may come to you via the in-and-out route of chair rungs and table legs, but, even so, he is not disobedient. He is only playing every inch of the way. Once called, however, he must be made to come, because obedience is the first lesson.

"Sit down," and, "Dead dog," do not entail too much physical exertion for the tiny tot. Immobility is not the long suit of healthy youth, so the reward system must be brought into play. At dinner time, when the puppy is hungry, hold his dish before him but out of reach. Then, when he stands still because the dish also is still, gently force down his hind quarters into a sitting position, and do not give him his food until he sits quietly. Thereafter, a bit of something good in the hand will serve to emphasize the "Sit down," and this, still later, may be replaced by the motion of the hand alone. When the dog becomes proficient, he may be directed to any designated spot such as a chair, a table or any place at all in which to sit down.

Next comes "Dead dog," or lying prone instead of sitting. Here, also, food will be the stimulus and the same line of conduct used as with the sitting trick. It will require much longer to instill the idea of lying flat upon the floor, but it can be acquired if food is withheld until the desired state of "dead" is reached.

The reward of a kindly pat on the head and a friendly word of appreciation should never be neglected even though food is, for the beginner, the expected pay for the effort. Later, when puppyhood's appetite has somewhat subsided and real love for the master has replaced mere puppy confidence, the master's air of "Well done" will be sufficient reward for any little member of the tribe of dog.

The next three tricks are closely related and are usually taught in a line because each is the outgrowth of the other. "Sit up," "Hold it," and, "Dance," become the next step into education. The first is the easiest trick in all of dogdom's accomplishments but should not be attempted at too early an age. The procedure is the same as for "Sit down," except that the food dish is held higher. In order not to confuse "Sit down" and "Sit up," the emphasis must always be placed on the latter word. When the order, "Sit up," is given, the dog will probably sit down, but this helps rather than hinders. Place one hand under the front legs and gently raise them into an upright position, meantime holding high the dish to rivet the attention upward.

A STUDY IN BLACK AND WHITE
The poodle draws no color line and obeys its little mistress without question.

Hold the pupil thus until he gets his balance. If his back is strong enough, he will soon get the knack of holding himself upright, and the fact that his head and neck are stretched in the effort to get at the food assists him in the matter of feeling for a perfect balance. In the case of very small dogs or toys, it may help to place the pupil with his back

against the wall for the first few times, though this is not always necessary.

"Hold it," is the children's delight. Once the dog learns to sit up, he is given the added duty of balancing a piece of meat or candy on his nose and is not allowed to eat it until permission is given. It is not best to begin with food of too tempting a nature, just a bit of cracker or something that will lie flat and at the same time not give out a too appetite-tempting odor. Starting off with anything as ravishing as meat or chicken is asking quite too much of a little dog's self control; he will be tempted to eat first and leave the trick until last.

First give the order, "Sit up," then say, "Hold it," as you place the tit-bit carefully on the nose. Watch him intently, controlling him all the while with your eye, as it were; then when the pose has been held for just a half minute or so, say, "All right," and let him eat the morsel. There is a finishing touch to this trick that will come later, of itself. It is the knack of flipping up the piece, turning the head sideways and swallowing it without permitting it to touch the floor. But usually this is not thought of until "Catch" has been mastered.

Closely allied with the two foregoing is "Dance," the trick of walking upright and turning round and round after the fashion of a real dancer. Little dogs love this one, but the big fellows act most comically, ashamed of themselves.

Food in the hand is the bait to compel the dog to stand up straight, and here favorite foods with a good scent will be of marked assistance. The smell promotes extra eagerness and even the little excitement required to encourage the dog to go round and round, following the motion of the hand as the order, "Dance," is given.

"Catch" is another easy one because it entails the actual eating of tit-bits thrown from the hand toward the dog. The underhand motion in the throwing is the all-important part of the trick because it will assist the dog in gauging the distance properly. An underhand throw launches the morsel more slowly and gives the pupil plenty of time to follow it with his eye. Stand quite a way off in order to provide for the grabbing as the piece comes down. Avoid hard substances as they may injure the teeth in the event of a muff. Oyster crackers are very satisfactory, being soft and easily followed by the eye.

"Catch" naturally leads to "Fetch," using the same idea of grabbing what is thrown. By substituting a ball or a stick and throwing it sideways—not directly at—the dog must chase it before grabbing. A ball is the safest beginning because the bouncing keeps it in sight if it travels too far ahead of the pupil. The dog will be tempted to run off with it at first and must not be scolded lest he get the idea that he is not to touch it. Let him play around a bit after each chase, then go to him and taking it away, say, "Fetch." Throw it again run along with him; then repeat. It may be some little time before he learns the trick of bringing back the object and laying it at the master's feet, but learn it he will when he catches on to the fact that his master must have it before he can throw it. Remember, your dog can reason also.

PHOTOGRAPH H. ARMSTRONG ROBERTS

LUNCH IS SERVED AT RECESS TIME
Just a trio at *dejeuner* after a particular arduous day spent in the classroom.

"Fetch" is a trick with all sorts of variations and may be employed for the bringing of sweaters, collars, the master's rubbers and anything at all that is sent for. "Go for a walk" and "Fetch your collar," will soon be mastered if the dog is deprived of his collar while in the house, and permitted to wear it only when going out. "Fetch your sweater" applies in the same way, but the walking outfit must be kept always in the same place.

I once caused considerable confusion in a little dog's mind by hanging curtains in the front of an old bookcase which harbored the dog's street clothes. Dreamy was promised a walk and straightway made for her coat and hat, so to speak. There were the shelves on which she expected to find her things, so, nothing daunted, she pulled curtains down and rooted out her leash and sweater without further delay.

PHOTOGRAPH H. ARMSTRONG ROBERTS

THE DOG IS ENDOWED WITH INTELLIGENCE

Who can look at this dog's face and not believe him capable of learning almost anything?

These are the simplest tricks which any dog can learn provided sufficient time and patience are allotted him; and there are many more—too many to tell about here. The underlying idea is the spirit of play, and when the master goes at it as if he, too, enjoyed the lessons, the little dog will work his brain to the utmost in the effort to understand and to carry out instructions. The daily review is all-important in order not to confuse one or more tricks and, also, to prevent forgetting old lessons in the learning of new ones.

Another caution is against over-tiring the pupil by too lengthy lessons. Teach but a single trick at a time and work only as long as the dog seems interested. With the addition of each new trick, review the old ones again and again.

Many have asked whether candy is a suitable bait to use in the teaching of tricks. Dogs love it and seem willing to do anything for it. But, naturally, folks feel that it is not the best of foods. As a matter of fact, it isn't. It may upset the stomach; it may do, oh, lots of things!

Trixie sits beside me now, gazing at a rather massive chocolate on my desk. Such longing in deep dog eyes you never saw.

"But it isn't good for you, Trixie; you know you are not to have it. What is the use of my preaching if you and I don't practice it. But—well—wait a minute till I see if anyone is coming. The coast is clear. Here, Trix, quick, Catch! What's a piece of candy between friends?"

Christmas brought a book of birds to Jack Durham of Wilmette, Illinois, a gift from his uncle, Robert P. Durham of Elmhurst, Illinois. With it was the following list of clever and humorous questions, which, Uncle Bob wrote, Jack should be able to answer after studying the book.

What color is the finish of a Redstart?
Why is a Cassowary of men?
Can a solitary Sandpiper eat as much as Toucan?
What petrified the bird, to make it Turnstone?
What bird can Eider Duck or swim?
Why do Homing Pigeons leave home?
Where was the Sage Grouse educated?
Do you admire the crust of the Magpie?
What does the Ovenbird cook?
How Swift is a Chimney?
Who milks the Cowbird?
Why did the Rosses call their boy Albert?
Has a Bald Eagle Heron?
Does a Quecock follow a Peacock?
What luck made the Ostrich?
Do you know a Bufflehead is Snow Goose?
What gave the Bluebird the blues?
What is a Mourning Dove at night?
What fare does a Passenger Pigeon pay?
What joke has the Laughing Jackass just heard?
Is Snow Bunting the Eskimos' national flag?
Does the Spoonbill live on soup?
What sent the Rainbird Cuckoo?
What is the Crow Raven about?
Who is cheer-leader of the Whooping Cranes?
Can you recognize the footprince of the Kingbird?
Do earthquakes make California Quail?
If two Sparrows are sold for a farthing, how much sense in a Golden Eagle?
Who painted Rhode Island Red?
Why not get an alarm clock to keep the Kittiwake?
Did the breaking waves make Plymouth Rock?
Who can Killdeer without a Flicker?
A Kite with too little tail Wood Duck and Tern, Yes?
Will a Nuthatch in time?
Would Ground Doves make good sausage?
Owl she know if the Turkey Woodpecker?
Why did they send the Canvasback?

In this article we take an all too fleeting look at the beauties of the wild flowers of South Africa. It is a glance, however, that makes one wish to go and see these flowers for one's self. Mrs. Bolus is an eminent South African botanist, head of the Bolus Herbarium given to the University of Cape Town by her uncle, a botanist of world renown. It is largely through the personal activities of these two that the National Botanic Gardens have been called into being.

Wild Flowers of South Africa

By Lulu Bolus

(Photographs by E. J. Steer)

FOR some two hundred years South Africa has been famous for her wild flowers. Before that, in the earlier days of her history, it was only the southwestern corner that received any attention from those who passed by in the ships of the Dutch East India Company. Yet even these mere nibbles yielded rich treasures and served to stir the hearts of the European flower-lovers. Then came the travelers—Thunberg, Niven, Masson, Burchell, and others—to explore and take back with them a wealth of beautiful plants to grace the stately gardens of Europe. It is enough to turn over the pages of those fine old botanical works of Jacquin, Rédouté, Andrews and Curtis, to see how important a place South African plants held at that time in the horticulture of Europe. Mainly as a result of their labors, a certain number of South African plants have been well established in cultivation — pelargoniums, agapanthus, amaryllis, tritonias, nemesias, ixias, barberton daisies, gazanias, crinums and others. But how small a proportion these form of the limitless resources at hand South Africa is only slowly beginning to truly realize in its entirety.

Hardly a dozen years ago the National Botanic Gardens were started at Kirstenbosch to undertake the great work of bringing the native flora into cultivation, and thereby save many beautiful species, doomed to destruction before the world could know them. Yet even in that short space of time the Gardens have demonstrated possibilities so endless as to be almost bewildering in their immensity.

It is impossible to speak of the flora of the whole of South Africa in one breath, or to take it all in at a glance or two. It is too vast and too diverse for that. The west is different from the east, and, as one leaves the coast and goes northwards into the Karroo, the flora is very markedly different from either. There are still further changes beyond the Orange River, and the high mountains forming the Drakensberg Range, and including the famous Montaux - Sources, has a distinctive flora of its own.

Associated with these variations in the vegetation are differences of soil, altitude, and climate. In the southwestern parts winter rains prevail and the

SUGAR BUSH ***(Protea mellifera)***
Within its shell-pink cups are vast stores of nectar for the sugar-birds to sip.

"BLUSHING BRIDE"
This romantically-named flower is here shown under cultivation at the National Botanic Garden at Kirstenbosch.

flowers are at their best in winter and spring. In the east the rainy season coincides with the summer, and the flowers respond accordingly. To mention but a few,—there are gorgeous orchids, often two to three feet in height, and many "bulbous" plants. The glorious Kaffir-boom *(Erythrina caffra)* has the bluest of skies as a background for its crown of red blossoms. The Cape chestnut *(Calodendron capense)* is clad in a mantle of pale mauve pink. Plumbago and other scramblers—Kaffir honeysuckle *(Tecomaria capensis)* and St. John's River creeper *(Podranea ricasoliana)* throw their long flower-laden branches over the nearest support. Many handsome shrubs and herbs of the Sage, Coffee, and Acanthus families are to be found on the outskirts of the forests.

In the Karroo the rainfall is meagre in the extreme, and here we have the many interesting growth-forms which are the delight of the botanist—each one a study in adaptation to adverse environment. There are the succulents, which defend themselves against long periods

ONE OF THE BLUEBELLS
Among the slender and dainty members of the whole South African range of flowers.

LONG-LEAVED HEATH (*Erica longifolia*)
One of the many beautiful members of this family in South Africa, largely in the southwestern section.

of drouth by storing water in their leaves or stems, or in large underground tubers. Often their branches are covered with a veil of thorns to serve as a shelter from the too ardent rays of the sun. Others, again, scarcely dare show more than the trace of a leaf for fear of having it scorched. These are harsh conditions for the nurture of delicate flowers.

But the desert does blossom as the rose, and these forbidding-looking plants do have beautiful flowers—cotyledons, crassulas, mesembryanthemums, pelargoniums, aloes, oxalises, "tulps," and many dainty annuals. The

Karroo violet *(Aptosimum depressum)* makes cushions of purple-blue flowers on the exposed veldt, low-growing hibiscus species have deep pink and yellow flowers with dark "eyes," and the driedoorn *(Rhigozum obovatum)* which is so widely spread in these regions, is indeed a lovely sight when covered with its deep yellow blossoms. Then there are the stapelias and their allies whose flowers must be placed in quite a different category, for their petals are *not* petaloid, in the accepted sense of the term, and that carrion smell, so vitally important in their economy,—they are pollinated by carrion-flies who lay their eggs in these flowers—is often overpowering to humans.

RIVERSDALE BLUEBELL (*Gladiolus bolusii*)
South Africa is now actively working to save her beautiful native flora for posterity.

In the southwestern region heaths and proteas abound, but each group requires a book to itself to tell half of its beauty and wonder. The western province has no season of the year without its wild flowers. Even in March, when the bright colors have vanished from the plains and left them in comparative gloom, there is still a bright glow on the mountains. One has but to recall the disas, of which the last to linger are the lovely blue (*Disa graminifolia*) and the flame-colored (*Disa ferruginea*), which may often be found till late in March. They are the brilliant product of the unclouded summer sun; and with them

WHITE ARUM (*Zantedeschia africana*)
A group photograph of this beautiful lily growing in a field in the vicinity of Claremont.

Nature gloriously closes, as in a gorgeous and many-colored sunset, the splendid array of these beauties of the floral year.

As soon as the first rains fall in April comes the awakening. They are slight showers then, yet quite enough to rouse many of the lowly herbs that have slept below the ground during the long dry summer. Among these are the numerous species of *Oxalis,* whose dainty

RED DISA (*Disa uniflora*)
In February this georgeous flower, queen of the Disas, reigns supreme, product of the summer sky.

blossoms of pink and yellow, salmon, white and crimson make the earth-carpet gay throughout the winter months. Flowering at the same time are a number of kinds of proteas notably the common "sugar-bush" *(Protea mellifera)* within whose shell-pink cups are vast stores of nectar for the sugar-birds. Some beautiful "bird-heaths" are also out then, and on the flats the small white heather extends for miles and miles. In June the pink bell-heather *(Erica viscaria)* with a sticky corolla will take its place. Welcome, too, at this cold season of the year, and warming the landscape with their spikes of red and orange-colored flowers, are the aloes, the most striking of all the South African lily family.

With the advent of spring, in August, comes yet a fuller burst of life, when the varied troop of "bulbous" plants lengthen their spikes and unfold flower after flower. Gray-blue, fragrant babianas and some with dark-blue cups half filled, as the children say, with crimson wine. Lachenalias—blue and amethyst, opal-tinted, soft golden yellow, or sometimes red and green combined; "tulps" and wild iris; gladioli of every hue; the orange satyrium and many other orchids; yellow "stars" *(Hypoxis stellata)* and white ones with metallic green centres to match the metallic sheen on the wing cases of their beetle visitors—these are only a few of the "jocund company" to "flash upon that inward eye which is the bliss of solitude".

PEACOCK STAR (*Hypoxis stellata*)
A woods flower growing about a foot high, with white petals and peacock-colored center.

Among the daisies are the well-known "gousbloem" (goudsbloem or golden flower) a name which covers species of *Gazania, Arctotis, Dimorphotheca and Ursinia.* On the mountain slopes the beautiful Cape anemone on its long peduncle sways in the wind, and the tall shrub, (*Podalyria calyptrata*), or "pink keurtje" is covered with large pea flowers, whose perfume sweetens the air, while the tips of the silver-tree boughs gleam like burnished silver. The fresh water vleis on the flats, many of them dry during the summer, are mantled with "water-uintje". The sweet-smelling pond weed *(Aponogeton distachyon)* and white arums grow in dense formation round their edges. Blue heliophilas, nemesias, diascias, sebaeas and other annuals have their brief season at this time, also.

In November the summer is with South Africa. Tall pink watsonias *(W. rosea)* with flowers more bell-like and drooping than others of this handsome genus, are on all the mountains, sometimes growing in close association, and sometimes loosely scattered among bracken, heath, and other vegetation. Stately aristeas (*A. capitata*) rear their long, sceptre-like clusters of blue flowers well above the surrounding shrubs. Red-hot pokers *(Kniphofia aloides)* are in the swamps, standing stiffly erect like red-coated soldiers, and, by the end of December, in the deeper vleis the water lilies *(Nymphaea stellata)* have spread the first of their blue and yellow stars a few inches above the surface on which their large round leaves are floating at ease. Cool blue lobelias are in half-shaded places and the dainty peals of wahlenbergia bells ring in the New Year.

On the mountains January brings the coral-red and pink watsonias (*W. tabularis*), the blue agapanthus, and the charming Christmas painted lady, heart's delight of the mountaineer. From mossy beds on cliffs and ledges, where the water drips continuously, are the charming "drip disas," of which the mauve-blue one (*D. longicornis*) with its long spur is the best-beloved, until February comes, when the gorgeous red one *(D. uniflora)* queen of them all, reigns supreme. The Lent lily (*Amaryllis belladonna),* too, is among the foremost of those who greet the Autumn, and in her wake follow other striking members of the family—King candelabra *(Brunsvigia gigantea),* scarlet blood-flowers *(Haemanthus),* the eye-lash leaved candelabra *(Buphane ciliaris)* and the mountain nymph nerine, with her glittering, gold-dusted petals.

On the Cape Peninsula, the gateway of South Africa, where the greatest concentration of all species of the region appears to exist, there are 2,296 flowering plants. This exceeds the number of flowering plants in the whole of Great Britain and Ireland. This is in an area of a scant two hundred square miles, or about one-fourth larger than the Isle of Wight. Is there any other part of the world of similar dimensions that can be compared with this for both the diversity and beauty of its flora?

Tackle the Tussock Moth

By A. B. Champlain

FOUR STAGES OF THE WHITE-MARKED TUSSOCK MOTH
From left to right, the caterpillar; the prepupal larva in cocoon; pupa in cocoon; and completed cocoon.

TWO generations of the white-marked tussock moth appear annually in the Middle Atlantic and nearby states, the first in May and the second and worst during midsummer. Systematic and co-operative measures of control would soon stop the injurious activities of these annoying and obnoxious pests, but they are allowed to do great damage year after year in very many localities because of ignorance or neglect.

This insect passes the winter in the egg stage. In May the little caterpillars hatch from the eggs, and proceed at once to feed on the under side of the leaves of a great variety of trees. As they grow larger they eat greater portions until all but the largest veins or ribs of the leaves are devoured.

About an inch and a half long, and marked with brilliant colors, the full-grown caterpillars of the tussock moth are striking in appearance. Four white brush-like tufts of hair—or tussocks—standing upright in a row on the back, are the prominent characters from which the insect derives its name. A pair of long, black plumes protrude over the bright red head, and a single plume rises from the hind end of the body. Shorter yellow hairs are scattered over the creature, while a broad black band, bordered with yellow, extends for the full length of its back.

In addition to heading the list of leaf-eating, shade tree pests, the caterpillars are a nuisance to human beings in a more personal manner. They drop upon us from the trees in our parks or at our door steps, and, as they crawl or are brushed over exposed portions of our bodies, leave an irritating rash upon the skin. This rash is caused by the small barbed hairs which are shed or easily broken off from the bodies of the caterpillars, and which may be brushed or rubbed into the pores of our skin.

The caterpillars are great travelers. The young ones drop from a tree, descending from branch to branch by means of silken threads. The wind may catch them thus and carry them for considerable distances. The larger ones may also migrate for a long way after having defoliated a tree, crawling from one tree to another via the trunks and ground. They are carried from place to place by vehicles of all kinds, and in this way may become established in the most remote places.

The cocoons are formed of spun silk mixed with hairs from the body of the caterpillars who construct them. It is in these cocoons that the caterpillars enter the pupal stage from which the creatures will finally emerge as adults or moths.

Tussock moths are inconspicuous in appearance, of a grayish brown color, and small in size. The males, with a wing-spread of about one and one-quarter inches, fly readily. The females, lacking wings except for mere rudiments, do not go far. They plaster their eggs in the form of conspicuous, white, frothy masses upon the outside of the cocoons from which they have emerged, and each mass contains from one hundred to five hundred eggs.

THEY RUIN TREES AND THEIR HAIRS IRRITATE
Note the predacious insects that are feeding on the caterpillars in this illustration.

Here is an opportunity for the Boy Scouts and other organizations of young folks to do some active work of civic improvement. Scraping off and burning the egg masses and cocoons that are plastered over buildings, tree trunks and other prominent places is a good clean-up project. A bounty or prizes offered

for certain quantities of these prominent and unsightly pests by civic organizations would help to stimulate interest in such a project and much good would be accomplished. A sponge soaked with crude creosote, mounted on a long pole, and pressed against the egg masses, is also an effective treatment, and quite sure as a preventive.

The caterpillars may be controlled with relative ease. A thorough spraying of the foliage with lead arsenate during June will destroy the first brood of caterpillars; a second application in August will clean up the second brood, if the first spray does not completely answer the purpose. Let's get ready and tackle the Tussock moth.

The Alien Sparrow

By W. L. McAtee

THE immigration question has been a burning one in recent years, but all arguments about the admission of human aliens are mild compared with the controversy that raged in the 'Seventies and 'Eighties following the introduction of our most familiar bird alien, the English sparrow. The bird was both caustically condemned and ardently defended. Its friends lauded it to the skies while its critics gave it every bad name, even implying that it did not deserve to be called a bird, in their pet term for it—the avian rat. In contrast to this wordy war, the introduction of the English or house sparrow to this country had been very quietly accomplished. Friends of the bird brought in lot after lot until they were first successfully colonized in 1853. In thirty years they had occupied the eastern United States as far west as Kansas and in another twenty years, practically all suitable places throughout the entire country.

FROM A DRAWING BY L. A. FUERTES.

DANGEROUS ALIEN OR GOOD FRIEND?
The relative merits of the English sparrow are largely a matter of opinion and personal decision.

The amazing rapidity of increase and spread of the English sparrow is a tribute not only to the fecundity but to the adaptability of the bird. More than any other feathered creature, the sparrow takes advantage of the conditions of civilization. In spreading across the country it depended not only on its own wings but was not backward in "bumming" a ride in box cars, particularly those loaded with grain, upon which it fed *en route*. The sparrow seeks sheltered places for roosting quarters, especially crannies about buildings, and takes advantage of warm nooks near heating pipes. By thus obtaining shelter from severe weather it gains a decided advantage over other birds. Sparrows are alert to tap every source of food and, in recent years, have shown their adaptability by picking from the radiators of automobiles insects that have been caught there during rapid motion of the machines.

The choice of food by a bird usually is the most important factor in its relations to man. What of the sparrow in this respect? One of the reasons for importing the sparrow was to have it eat the dropworm, a shade tree pest which spun down on silken threads among pedestrians and no doubt was regarded as a nasty worm by the flappers of that day, if such there were. The dropworm is no longer a pest in cities and entomologists give sparrows the credit. Not only this pest but almost every injurious insect we have is eaten at times by this ubiquitous alien. On the other hand, buds of trees are torn to pieces, tender garden growths are nipped, and grains of all sorts are laid under tribute.

Flocks of sparrows commonly resort to poultry yards and help to consume the feed. This instance illustrates the complexity of bird problems, for some people like to feed the birds including sparrows, even supplying food especially for them, while others condemn the birds for every stolen kernel. Thus general recommendations as to what to do about sparrows are out of the question. Those who wish to reduce their numbers can utilize efficient trapping and poisoning methods which are described in bulletins that may be obtained from the United States Department of Agriculture. Aggressive operations have greatest results in winter when food is scarce. Those who wish to protect sparrows probably feel no need of justification of their stand, but may take adidtional comfort from knowledge that the object of their care is the only species besides the blue rock pigeon that will live in treeless districts of cities and, therefore, is the only small bird friend of thousands of city shut-ins. It is further beyond question that the English sparrow is one of the most interesting and adaptable of birds, probably the one above all that comes nearest to being civilized. The fact that it is an alien is no reproach; so are we all, remember that.

Nursery Nature Tales

BEING THE ADVENTURES of TOBY & BETH
TWO VERY LITTLE PEOPLE IN THE BIG WORLD

Easter Eggs

By Elizabeth K. Peeples

"Where did my good egg come from?" asked little Beth laying down her breakfast spoon. "And my pretty Easter eggs?"

"Why, from down on the farm," answered Toby.

"But where on the farm?"

"Let's go and see," said mother.

Soon the auto was off down the road. It was dark when they reached the farm, so Toby and Beth went straight to bed.

In the morning Beth was wakened by Toby's calling, "Wake up. Listen to the chickens out in the henhouse. What funny voices!" They both shouted with laughter.

"Come," said mother, "get dressed, we are going to see the chickens."

Downstairs she gave each one a basket with grains of corn, oh, ever so many in it. Then they went out to the henhouse. As mother opened the door out came hundreds of hens—hens of all colors, reddish brown, black, white and speckled.

"Oh, see that big chicken with red ruffles on its head!" cried Toby in glee.

"That is the father chicken. His name is rooster. The hens are mother chickens. They have small red combs, too," explained mother. "Now give them their breakfast."

Toby and Beth scattered the corn over the ground. They worked hard and fast, but the chickens ate faster.

"Oh, they'll all be sick," said Beth. "They're swallowing the corn whole!"

"They have no teeth for chewing, but they have a little mill inside for grinding the corn," said mother.

"I've seen chickens eat sand and pebbles. Are those the mill stones?" asked Toby.

All day the children watched the chickens. They saw that a chicken lifts its head to drink so the water may run down its throat. They saw them scratch for food with their strong feet.

"Can chickens sing?" asked little Beth.

"I know they talk," said Toby. "You hear those hens lying over there in the sun and dust talking to one another."

Just then a brown hen came out of the hen house cackling, "Cut-cut-cut-ca-dah-cut!" and the rooster joined in with his deeper voice.

"They do sing," said Beth. "What are they so happy about?"

"Let's go see," said mother and she led Toby and Beth into the hen house. There on the floor was a row of wooden boxes half full of straw, and in all but one a hen on the straw nest. Moving softly, mother, Toby and Beth peeped into the empty box. There on the straw lay a beautiful white egg. It was still warm.

"Now I know why she was so happy," said little Beth.

"I can show you a hen who is happier," said mother as they crossed to a quiet corner of the chicken yard. There in a small coop was a mother hen with twelve little chicks like balls of down.

"Look at the fluff balls! Oh, where did they come from?" cried the children.

"Out of the eggs the hen laid. She sat on the nest and kept them warm under her feathers until each shell cracked, and a little chicken hatched out," answered mother.

"Peep, peep," said the chicks. "Cluck cluck, cluck, cluck," said the mother hen.

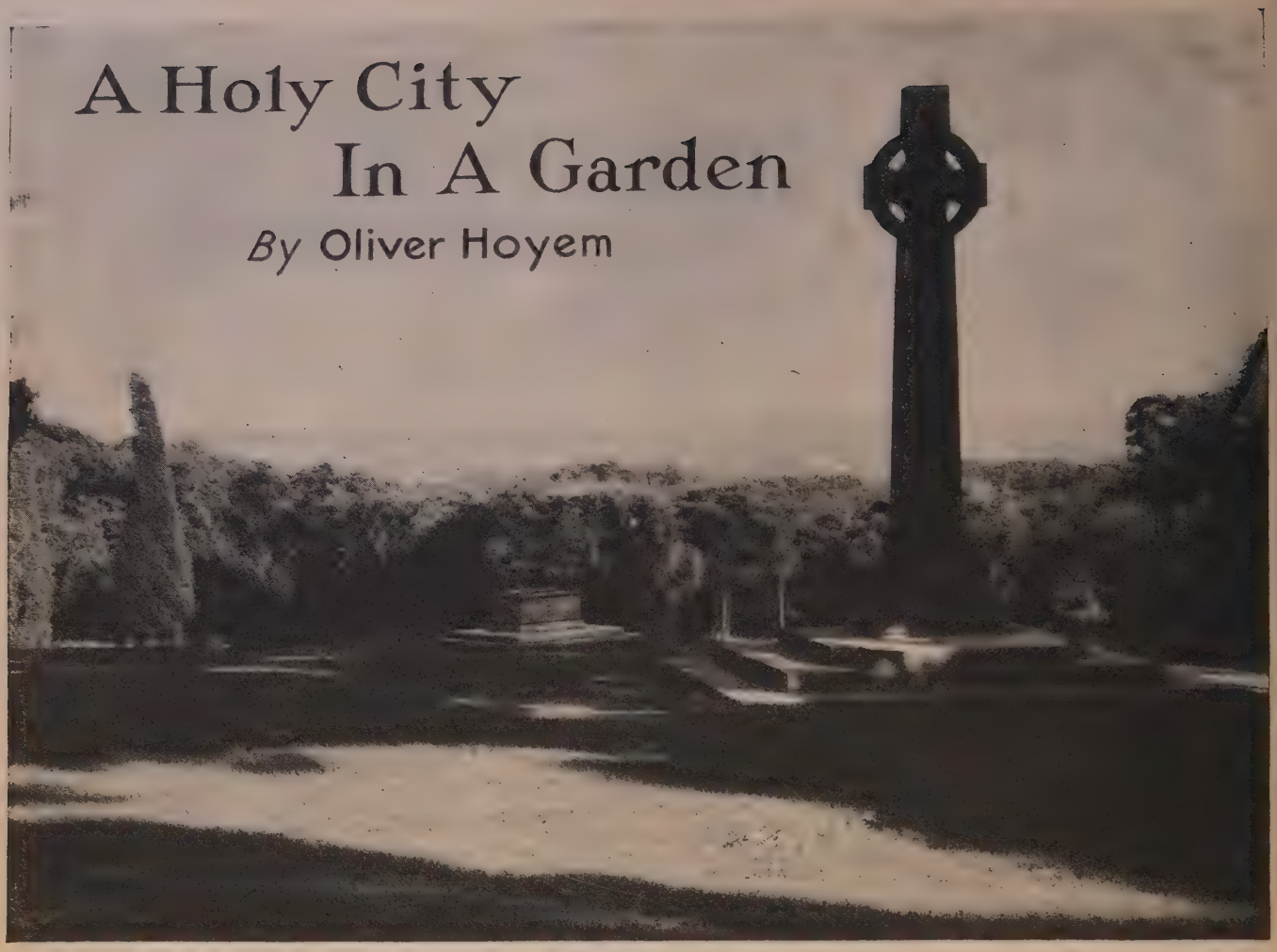
"She ticks like a clock," laughed Toby.

"No, the chicks say, 'Mother!' and she says, 'Yes, dears,' " said little Beth.

That evening the children gathered the eggs.

A Holy City In A Garden

By Oliver Hoyem



LOOKING OUT OVER THE NATIONAL CAPITAL
The view from the Peace Cross of the National Cathedral at Mount Saint Alban where Nature reigns.

A CLOSE communion with Nature marked the beginnings of Christianity, but soon worshippers surrounded themselves with walls until those who sought God in Nature were almost suspected of paganism. Today, while most American churches can boast nothing green, God's in his garden on Mount Saint Alban in Washington, for the builders of Washington Cathedral are surrounding their magnificent temple with an earthly Paradise.

The plans for Washington city which L'Enfant worked out with the First President called for a great cathedral where the Patent Office now stands. It would have risen sheer from the pavement as do the great cathedrals of Europe, so perhaps it is best that the project was delayed until an age which could associate the cathedral with Nature. Thirty years ago, when the Episcopal Church was finally embarked upon its cathedral-building enterprise, appreciation of the wisdom of giving great architecture beautiful Nature settings was not very general. Consequently we have reason to marvel at the foresight and careful planning displayed in providing the setting, an earthly paradise of sixty-seven acres four hundred feet above the nation's capitol.

Twenty-nine years ago ground was acquired and the exact location of the cathedral was determined. Landscape architects were called in to advise about the setting. Their enthusiasm is reflected in the report of Frederick Law Olmsted, the noted landscape architect, who said:

"The setting of Washington Cathedral is most rare in picturesqueness and beauty, whether we consider its aspect as viewed from the city or that of the city as viewed from the cathedral site. Seen from the city, the cathedral will crown a densely wooded hill, standing tree-embowered at the summit of easy and graceful slopes. It will rise heavenward out of and above Nature's strength and beauty, in towers and buttresses and pinnacles as a sublime, God-inspired anthem in stone."

While the hand of the master artist guides the gardeners at the Cathedral, he knows that the great progress made has been largely the result of the work of the men, women and children who are members of All Hallows Guild, which was organized in 1916 "for the beautifying and care of the Cathedral Close." Its annual meetings are events for the Nature-lovers who attend and the spirit of the Guild is reflected in the printed reports of the chairman of the garden committee, Florence Bratenahl, who is the wife of the Dean of the Cathedral.

So far the Guild has devoted itself largely to the Bishop's Garden and the development of the future must be seen through the results achieved in this comparatively small area. There is the Dolly Madison boxwood, the Thomas Jefferson boxwood, and the boxwood from the historic plantation of Hayfield Manor, Fairfax County, Virginia, built by George Washington in 1761. A wonderful specimen of the dwarf type of boxwood, which experts declare must have been brought over from

A GARDEN OF GLORIOUS BOXWOOD
Lying beneath the rising walls of the cathedral, the planting shown here is to frame flower gardens of the near future.

England by the original cavaliers of Maryland, was rescued from an unappreciative owner thirty-five miles away who wanted it removed quickly so that he could build a pigsty in its place. Of even greater importance was the transplanting of an entire boxwood garden over one hundred years old from a ruined estate in the Shenandoah Valley. As an accent, at this garden's far end a magnificent yew tree was brought in a few months ago from Virginia where it had been acquiring dignity and cathedral-like proportions for two centuries. An ivy vine from the old church at Jamestown, Virginia, and another ivy from Walter Scott's "Abbotsford," given by Sir Walter to Washington Irving, are ready for the right wall. From all over the country come the historic plants, even to a rare collection of Woodwardia ferns from Roseburg, Oregon, raised by Mrs. Willis, an 82-year-old new member.

Not only American gardens have associations here. The spirit of the gardens of the world will be reflected. There is the Glastonbury Thorn, brought from Glastonbury Cathedral in England, where the original is said to have been planted by Joseph of Arimathea. It is an object of much interest because it occasionally blooms at Christmas time as well as in the spring. Two tall cedars of Lebanon have grown from young trees brought from Palestine twenty-five years ago. In another spot is a slip of ivy from an old garden at Verdun, picked in a trench on the day the Peace Treaty was given its signature.

As fast as money for new plantings comes in, and as fast as new gifts are received, the plans go forward. A gift has made possible the erection of a stone garden house or "Shadow House" built in the angle of the wall with vistas below through the trees. Within the boxwood garden one of the flagstone walks leads to a little square enclosure, "an intimate little garden designed on the lines of the simplest form of monastic garden," says Mrs. Bratenahl, "the circle within the square with an old well head or fountain in its center. Can you not see in this little garden with its old fountain, tall white lilies, a few roses, whose names are almost forgotten, lavender, burnet and rosemary, heliotrope, the scent of thyme, the haunting fragrance of stock and gilly flowers? And if you linger here you will find its flowers will interpret its spirit in a beautiful symbolism. The lily, 'the flower of light,' was always the symbol of purity in mediaeval days, while the rose signified Christ's death or Divine Love. The iris was the emblem of royalty, and the columbine, because its flowers are so like a cluster of doves, was the seven gifts of the Spirit. The simple daisy expressed the innocence of the Holy Child. Some way, on the hallowed ground of this hillside, with the Cathedral above, this can not help being a spiritual garden."

Behind the Washington Cathedral concept is a philosophy that recognizes the influence of Nature upon man's spirit. Christianity, say the cathedral builders, of today, should carry with it an awakened interest in the works

BISHOP HARDING MEMORIAL BOXWOOD AND THE CATHEDRAL
This dwarf type of boxwood was transplanted to the Close in 1924. It weighed six tons and was brought thirty-five miles.

of God as seen in the natural world. Cathedrals and churches whose towers of stone have been wedged into crowded city thoroughfares make free use of Nature's forms for decorative and symbolic purposes. Early Christian art is full of Nature symbolism carved into the simple utensils used for worship or painted on the walls of meeting places. Restrictions upon the use of human figures for decoration were the result of the feeling against idol worship, but leaves and trees and birds did not come under this ban. Nature's forms have been the basis of most Christian decorative art. So in Washington Cathedral the flora and fauna of the sixty-seven acres of Close will be carved into the stone and wood of the cathedral in new designs. The trees, the flowers, the birds and animals of America will be the symbolic forms, in original designs, of the new American cathedral.

More significant than the representation of Nature in more or less traditional forms in the stone of the temple itself is the manner in which the Cathedral is being surrounded by its own Paradise. All the living things that inspire the interior decorations are being carefully tended and nourished. There are on Mount Saint Alban native trees in abundance. Among the undergrowth and ground cover are ferns, wild azalea, mountain laurel, holly, arbutus and other enchanting wild flowers. Caressing the buildings and relieving their rigid lines are ivy, clematis, wisteria, bittersweet, Virginia creeper, wild honeysuckle, rose and wild grape, growing in abundance.

Nature's influence upon the cathedral does not end with the exterior setting or the interior decoration, but permeates the entire structure. The pointed arch illustrates this idea, for it is the form selected by Nature as most beautiful and most useful. It is the form of the leaf, the blade of grass, the flower petal. Its gracefulness conceals its strength, but the great secret of its beauty lies in its possibilities of infinite variation. Nature has utilized these possibilities. As the leaves spring from a stalk or the branches from a tree, so the Gothic vault springs from the columns. Thus we have even the cathedral structure itself growing out of an understanding of Nature's beauty and strength.

Outdoor services in summer are to be permanent features of worship as long as the Cathedral stands, and All Hallows Guild therefore feels as reverently toward its responsibility of making the outdoors beautiful as does an altar guild toward its duty of adorning the altar. To All Hallows Guild all outdoors is God's altar and all mankind can appreciate such religious symbolism. In this spirit they invite all Nature lovers to join the Guild and assist in the building of a spiritual garden. The group is still small, but it covers the world. Its shrine is national and international. Its garden is as open as is its membership to those imbued with a desire to make it a fit place for the spirit of Jesus to walk.

PHOTOGRAPH FRANCIS DICKIE

GROUND SQUIRRELS ARE "SLEEPYHEADS"

That is, they are during the winter, but April awakens them and they are plenty lively then.

SOME INTERESTING APRIL OBSERVATIONS

By E. LAURENCE PALMER

IT IS strange that we should associate April with fools when the month has given us such men as Wordsworth, Shakespeare, John Muir, Thomas Jefferson, Washington Irving, and others of almost equal rank in their fields of endeavor. To be sure, April took Lincoln and Franklin from us. This is typical of the month, however. April is a mixture of smiles and tears, of sunshine and showers, of cool nights and warm days, of Easter bonnets and of galoshes. It is fortunate that many of those with whom we associate April did not live in the days of some of our modern Nature critics. Had they lived to-day some of their most satisfying contributions would have been most severely criticized.

Slightly over a hundred and fifty years ago this April, Wordsworth was born. Eventually he wrote, "I wandered lonely as a cloud that floats on high o'er vales and hills." Had he written in this style in these days many would have said that it was impossible;—that a cloud had no consciousness of itself and therefore could not be lonely. Nevertheless there are those of us whose imaginations have not been completely killed by our early training; who can get some worthy satisfaction from this type of activity. April supplies us with a variety of opportunities for reading our own experiences into the world of Nature. Such experiences may mean more to us than the commonplace experiences which appeal only to our physical senses. They may supply us with pictures which may persist and "flash upon that inward eye which is the bliss of solitude." Let me recommend Wordsworth to you for a companion on your April rambles. You may get more than trout from the brook on the first day of the season if you read,

"It was an April morning; fresh and clear
The Rivulet, delighting in its strength,
Ran with a young man's speed; and yet the voice
Of waters which the winter had supplied
Was softened down into a vernal tone."

What, if any, other human attributes besides loneliness and speed can you, with the sanity of Wordsworth, read into Nature as you see it in April? It may be just as well for yourself if you keep these things to yourself but that may make it even more valuable to you.

Washington Irving, another April product, takes us from the field of poetry to fiction. While his "Rip Van Winkle" did not wake up until after twenty years, April marks the awakening of innumerable creatures that have slept for months. "Sleepyhead" might be an appropriate name for many of the snakes, turtles, frogs and small mammals like the ground squirrels which you see in April, but they quickly "snap out of it" and adjust themselves to the new state of affairs. If they don't they may soon sleep the sleep of the dead since their enemies are probably as hungry as they are themselves. What, if any, of these long distance sleepers are fat

A GAME WARDEN OPENED THE BULLFROG SEASON

He didn't know, however, that these fellows stay in the tadpole state for two years.

when they come out of their winter beds? Are all snakes, for example, unusually "lean and ganglin' like" in April? Are they like frogs and ground squirrels in this respect? A very large number of these long sleepers mate soon after they awake and this leads to a display of all sorts of courting activity from the croaking of frogs to the amusing caresses of newts. For many of these creatures April is the month of the "Grand Parade" to the breeding grounds. This, however, is not limited to Nature's Rip Van Winkles.

Woody plants as well as common animals apparently do a great deal of awakening in April. To help you get acquainted with "the budding groves" which Wordsworth said "seemed eager to urge on the steps of June" refer to the April, 1926, Nature Magazine. In which of these trees do the buds tend to become crowded at the tip,—elm, maple, oak, butternut, or poplar? What, if any, effect does this have on the general appearance of the tree?

PHOTOGRAPH MARJORIE SHANAFELT

BABY COTTONTAILS IN THE NEST

This is an Eastertime picture of the little bunnies all warmly cuddled together in their home.

John Muir came into being in April and later wrote one of the best of dog stories, "Stickeen." If you haven't read it do so after having reread about Paul Pry and Rob Roy in Nature Magazine of a year ago. Dogs are just as different as are the writers of magazine articles but Stickeen and John Muir were above the average in each class. Muir's greatest ability lay not in narration, however, but in description, or rather a happy combination of the two, which he seemed to produce with great credit. The Yosemite and our other National Parks have meant much more to those who have read Muir than to many who have not. This leads one to the thought of public parks anywhere. Are the parks near your home of such a nature that they have preserved as much of the native beauty of the site as possible? Have these native interests been given equally prominent publicity and opportunity to show their worth as have exotic attractions? Have you carried out this idea in the decoration of your home grounds or have you thought it necessary to look to exotic and bizarre shrubs and plants for your home grounds? If possible select some "show plant" which has been given a prominent place in some yard and then see if you can't find growing wild in Nature something even more attractive. Has this attractive wild plant been injured by "Nature lovers" who "love" Nature so much that they have to destroy it? If you live near some large city make a record of the people whom you see bearing wild flowers home from a trip to the country and see if the majority have their flowers in good condition or if those with ruined bouquets are the more numerous. I tried this one Sunday last April in New York City and the wrecks won without any difficulty. Checking up on the activities of others in this way helps one check up on himself.

If April had given us no other great men it would have earned sufficient credit when it gave us Shakespeare. At times, he described Nature so well that many of his readers have foolishly thought it unnecessary to go to the original source for additional inspiration and information. There are sufficient Nature references in Shakespeare's writings to warrant more space than can here be given. I merely wish to suggest that you try using your Shakespeare for suggestions in your Nature activities. Though he frequently expressed beliefs which, since his time, has been proved to be false, he was, in a sense, as Ingersoll says, "an intellectual ocean towards which all rivers ran and from which all the isles and continents of thought received their dew and rain." We cannot criticize his inaccuracies well when our modern times with their splendidly coordinated sources of material produce such plays as "The World We Live In," supposedly based upon Nature material. It may prove interesting to you to exercise your Nature training by checking up on some of the things you see in moving pictures. Eucalyptus trees growing in supposedly northern cities and great clouds of dust arising behind prairie schooners crossing unbroken prairies, to say nothing of the neat and jaunty clothing worn by actors that have just come through tremendously "rough" country, always make an otherwise tiresome picture interesting. This may prove a profitable Nature activity some rainy April night.

April also brought to us Thomas Jefferson, the scientist President. There is evidence that there would be place for more of his kind in politics today. Majority votes cannot decide whether or not evolution is a fact; whether or not wine and beer will intoxicate; whether or not vivisection is a blessing to the human race, and whether or not certain unpopular sanitary and public-health procedures are worth while. Politics and science have not mixed enough. The king, Canute, who sat on the beach and defied the tide water to advance found that politics could not change that relationship between the moon and the earth, which would have

(Continued on page 264)

is deemed suitable. For three weeks the patient mother guards them from cold and storm, and not infrequently is buried by an early snow-fall. Undoubtedly the male bird assists her in the incubation, else the mother would have no chance to feed. When the eggs hatch she leads the tiny buff and black-spotted babies away almost at once, and the discarded shells may usually be found in the abandoned nest. If danger threatens she attempts, usually with success, to decoy the enemy from the spot, and often carries one or more of her defenseless babies out of the danger zone. This habit has been noted many times by reliable observers, both in the case of the old-world woodcock and our own species, and is accomplished in several ways. In the only instance personally observed the young bird apparently was held between the thighs of the mother, but others have seen the young grasped by the feet of the old one, and thus carried to safety.

I am not aware that the food of young woodcocks has ever been studied, but it is almost certainly the same as that of the adult. Earthworms constitute the principal item of the diet, though various insects found by the bird beneath the leaves are also eaten. Captive woodcocks have been known to devour twice their weight in earthworms each day, and their demands for food usually lead to their liberation. On at least one occasion young birds raised in semi-captivity became so tame that they would fly up and alight on the shoulders of their owner.

AN EARLY MORNING PORTRAIT

By facing in another direction the mother woodcock has the advantage of a different viewpoint.

This, then is one of the birds that some writers would have us believe carry no esthetic charm. This lovely creature, that sings to its mate from the air, that guards so closely its eggs that one may take it in hand, that carries its helpless young to safety when danger threatens, has no value, we are told, save that which may be measured by the joy attending its pursuit, and the succulence of its flesh, merely because it has been designated as a game bird. And for the present gratification of its pursuit, the gunners seem willing to destroy the bird forever. It is not enough that its nesting haunts are ravaged by fire, that storms of unusual severity take cruel toll of the fast-diminishing remnant, and that the automobile and the telegraph wire have now been added to the list of its destroyers.

Close students of the woodcock warn us of its impending extinction unless the present rate of destruction be curbed, and there is a widespread demand from naturalists, seconded by many sportsmen, that more decided measures for its protection be adopted. Forbush, himself a sportsman and a keen naturalist, who has studied the woodcock for many years, after recounting some of the dangers that attend the bird in its winter home, says: "But their greatest danger, the country over, lies in the multiplication of gunners. An expert shot with a good woodcock dog can kill most of the birds his dog puts up. In the upper Mississippi Valley the woodcock is now practically a thing of the past. Its greatest refuge and breeding-ground at present is the Atlantic coast territory, particularly New England and the southern part of the Maritime Provinces. If we do not adequately protect it here, its extirpation is only a question of time."

Legislation in favor of this splendid species has always lagged far behind the bird's real need. Three-quarters of a century ago Frank Forester, Lewis, and other thoughtful sportsmen began to urge its greater protection. These early efforts were directed mainly toward the abolition of summer and spring shooting, which caused the destruction of many young birds scarcely able to fly, or the parents of still helpless young. Gradually both summer and spring shooting were outlawed, in Rhode Island as early as 1846, and in Ohio in 1857. Iowa, in 1878, declared a bag-limit of twenty-five birds a day, and Illinois a close season of four years beginning in 1911. In 1901, A. K. Fisher, naturalist and sportsman, published a powerful appeal for legislative and voluntary reduction in shooting to save this "vanishing bird" from extinction. It is somewhat discouraging to note that at that time, more than half a century after the warning had been sounded, ten states gave absolutely no protection, and nine others still permitted summer shooting. No outstanding remedial measures, however, resulted from this appeal, though since that time bag limits have gradually been lowered, and in many cases seasons have been shortened. The Federal Migratory Bird Law, and the Migratory Bird Treaty Act have undoubtedly greatly helped the bird, but these have not sufficed to offset the effects attendant on our increasing population, and its facilities and will for destruction. In even a brief statement of the legislation affecting the woodcock two factors that contributed to its former wholesale destruction should be mentioned. The demand for its flesh resulted in seventy-five cents each being a common price for the seven or eight-ounce birds. In the days of unrestricted market-hunting this naturally led to great slaughter when large flights were encountered. Judging by the scores admitted by prominent sportsmen of those days, that class was no less culpable. The comparatively early breeding, and the consequent maturity of the birds at a date when no other shooting was permissible, resulted in an open season beginning in summer, and this practice,

as has been noted, was difficult to drive from the mind.

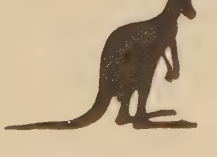
The hours of darkness are the woodcock's delight, and so well is he able to take care of himself then, that we have yet to find a record of the capture of the bird by any species of owl, though the smaller predatory mammals probably destroy some, and cats are known to kill many. In his daylight activities also, in a state of Nature, he appears to have been very self-reliant. He moves but seldom of his own accord, and is not easily flushed. Only one woodcock, taken by a marsh hawk, appears in the records of the stomach contents of nearly a thousand hawks, representing nine species, and including large numbers of those kinds known to subsist mainly on birds. As all these hawks represented localities and seasons when woodcock were presumably present, we may acquit the birds of prey of any complicity in lessening the ranks of this species. But the trained dog unerringly points out the woodcock's lurking place, the bird's tameness allows the hunter to place himself in the most advantageous position for a shot, and the proportion of birds killed is probably greater than in the case of any other game bird. Many hunters claim more than a fifty per cent kill of woodcock started; one killed thirty-eight out of forty-one flushed. Frequently woodcock will fly only a short distance, and often they will alight within sight. They have also a liking for a particular place and often can be found in the same thicket on successive days. Most of this destruction occurs during the southward flight, mainly at the time of the bright moon of October, when the birds congregate by day in favored haunts.

What may happen to a bird like the woodcock was well shown in mid-February, 1899, when a very severe snowstorm, followed by freezing weather, occurred over most of the eastern seaboard. Great numbers of wintering and northward-migrating woodcock, then concentrated in the Carolinas and other southeastern states, were overwhelmed by deep snow and frozen feeding grounds, and perished in vast numbers from cold, starvation, and unrestricted shooting. A reliable and careful observer, A. T. Wayne, estimated that tens of thousands were killed by so-called sportsmen on this occasion. The name of the wretch who in a few hours shot two hundred pairs of these freezing, starving, emaciated birds is fortunately not recorded. The dearth of sympathetic observers in the affected area prevented any adequate estimate of the total damage, but it was tremendous. Barrow-loads of the slaughtered birds were offered for sale. The effect was apparent for many years, but beyond the recording of the phenomenon in a few journals the tragedy was treated merely as a passing incident and no helpful legislation seems to have resulted.

Present day facilities for quick transportation have made possible the massing of gunners in places where undue numbers of woodcock congregate in migration, due to convergence of flight lines caused by peculiar coast trends. It is a sad commentary on our methods of game protection that such opportunities for destruction are almost never met by any effective restrictive measures.

For hundreds of years the woodcock of Europe has been much esteemed by sportsmen, and it was natural that the American bird should early claim the attention of hunters, especially after the improvement of firearms. Accounts of the abundance in early days read almost like fairy-tales, and recollections of our own boyhood experiences bring up memories of thronging autumn coverts and well-tenanted breeding places that we wish might be repeated. But the effects of continuous persecution are all too apparent. Thoughtful writers testify to the bird's growing scarcity throughout its range. Occasionally an unusual combination of weather conditions may result in the appearance of large numbers in certain places, and create a false impression of abundance in the minds of the uninformed. But these aggregations almost always result in slaughter, and are really indicative of lessened numbers.

Aside from the Java woodcock and one or two insular forms of doubtful validity, only two species of true woodcocks are known. The Eurasian species, *Scolopax rusticola,* ranges from western Europe eastward to Japan, and from the Himalayas northward into Siberia. The other is our own American bird, *Philohela* (or *Rubicola) minor,* which breeds from southern Canada south to Florida and Louisiana, and west to the Mississippi Valley and casually farther. Over at least the northern half of this range the bird must absent itself in winter. The extraordinary scientific interest attaching to a group so sparingly represented, and of relatively restricted distribution, and the charm of the bird to the Nature lover, would seem to more than offset any claim that the sportsman may have on the remnant now surviving, unless it be given a term of absolute protection. No one can deny that man is responsible for the present plight of the woodcock, since the destructive effect of its natural enemies is negligible. Is it not reasonable, therefore, to ask that the utmost safeguards be placed around this species, that a tragedy like that of the passenger pigeon may be averted?



"Music of Wings" is the title that Herbert Ravenel Sass gives to his story in the May issue of NATURE MAGAZINE. *It is written, of course, in Mr. Sass' charming style and takes one exploring in a fascinating country.*

This issue will also include the fourth article on the American Nature Association's Expedition; the story of periodic locusts; and another interesting weather article by Charles Fitzhugh Talman.

JENNY WREN IS BACK IN HER HOME AGAIN
Yes, there is a full-fledged youngster in the inset in the upper left-hand corner of the picture.

PHOTOGRAPH H. ARMSTRONG ROBERTS

NESTING TIME IN BIRDLAND

By PAUL GRISWOLD HOWES

AT length the snows melt away. The winter months vanish quickly into memory when we see the bluebird high in the air. We watch his leisurely flight with companions at either side, and, then, his sweet warble reaches us, and we know that the great feathered army has started its long journey northward. Its myriad individuals are answering, as one great machine, the command that whispers "Nesting Time!"

Who cannot rejoice at this and be still happier when the robin trills his evening carol? When the wren commences to carry sticks into the hole in the leader pipe, it is almost an ecstatic moment, but with many of us our knowledge of birds' nests ends right there. Come with me, then, through nesting time and I will show you where the treasures are hidden and how some of them may be brought to your very doorstep.

Birds adore human association. It is only necessary to gain their confidence to have bird friends, and year by year they push closer about mankind and his homes. I can remember when one had to go to some very tall and

uninviting tree to find the nest of a pair of sparrow hawks, but last year a pair reared their brood inside a porch column close to where I live. All day long the parents brought snakes in their talons to feed their babies, in plain sight of the people upon the porch! Likewise it was rare to see birds of the thicket and open woodland about our shrubbery, but now they nest there quite at home!

In April, bluebirds, robins, chickadees, nuthatches and phoebes begin housebuilding. A few well-placed houses are certain to have tenants before the month is very old, and by setting them low along fences or on the laundry line poles, one may watch the owners closely at their nesting activities. There is no need of nailing perches in front of the doorways. Hole-nesting birds are expert in flying in and out of a hole entrance.

The phoebe, before man closed in upon it, built its green moss nest in rocky caves, or on the sides of hillside boulders. Then man came with his bridges and buildings, and the phoebe came to man. We find many nests still constructed in the old environment, but a shelf of small dimensions, nailed under the eaves of the house or barn, will often quickly solve the phoebe's house-hunting problems. Then, later, we may peer in from the stepladder at the four pinkish-white treasures on their bed of moss and horsehair.

The robins and wrens, the bluebirds and nuthatches, like all birds, are not really timid at all. They will accustom themselves to anything as soon as they know that no harm will come to them through their trust. Witness the robin that built its nest upon a railroad bridge, over which hundreds of trains roared each day. Still, this is nothing out of the ordinary, and I have found many such nests.

PHOTOGRAPH BY MR. HOWES

IN WILLOW OR FRUIT TREES
There the yellow warbler's nest of plant fibre may be discovered.

The twenty-fifth of May marks the nesting season for a great number of species in the eastern states. At this time the meadowlark has commenced to incubate its eggs. The nest in a scooped-out hollow in the meadow is completely and beautifully formed of dead grasses, arched over with a sort of roof. The four or five white eggs are lightly dotted with reddisn brown and gray. Few sights are more beautiful to the bird-lover than this lovely grass cup with its delicate contents, and its sweet-voiced builder. Perhaps we come upon it before sunrise when the grass is dew-drenched. The female flutters away, but we mark the spot where she rose and keep our eye fixed upon it as we circle widely around to it. Finally we find a faint trail of darker grass, where the bird has brushed the dew away. It leads directly to the nest and eggs. That is the secret of the meadowlark's nest.

Nearby, in the clover or ragweeds, the bobolink has its home. By continued watching and flushing, you must seek this nest by elimination. It is a flimsy affair of grass filled with five or six grayish eggs, spotted and blotched with umber and olive-brown. To build this little cup and rear a brood the bobolinks have come all the way from beyond the Amazon!

Watch carefully in the old orchards and along the rows of youthful maples that line suburban streets at this time of year for the orchard oriole. Unlike its cousin, the Baltimore, the orchard oriole makes its lovely nest entirely of delicate

PHOTOGRAPH BY MR. HOWES

MOTHER BLUEBIRD BRINGS HOME LUNCH
Here she has a mouthful of crickets for her group of hungry youngsters.

WHAT IS THE RENT?
The bluebird is looking over the home sites.

green grasses, woven into the leaves and twigs in the denser part of the tree, about twenty-five feet from the ground. The nest can be discovered best by carefully watching the birds, and the female will be seen flying swiftly, just ahead of the urging male, with a streamer of grass flowing behind her. When the grass cup is woven, it is lined with the down of dandelions to cushion the three to five light bluish-white eggs, scrawled and blotched with lavender and black in gay fashion.

In the willows by the pond, or, perhaps, in a fruit tree close to the house, the brilliant yellow warbler places its nest of silvery plant-down. Sometimes it is high, one story placed above the other, in order to seal up the egg of a cowbird. Normally, however, the nest is shallower. The four or five bluish-white eggs are spotted with cinnamon and other shades of brown. Now, too, the ovenbird has full sets of eggs in its oven-like structure of leaves on the woodland floor. In the thicket nearby the chestnut-sided warbler is brooding in a nest, placed close to a hornet's abode, perhaps, for protection. Above, on a hickory limb, redstarts are saddling their downy nest, and on the briar-grown hillside, the blue-winged warbler has deposited five white eggs spotted with cinnamon and rufous, upon a dark lining of shredded bark.

Look in the bigger maples and basswoods, between ten and thirty feet from the ground, and in the fork of a small limb, for the exquisite grass nest of the yellow-throated vireo. It will be adorned with bits of birch bark, lined with scarcely-faded grasses, and its contents of four pure white, black-dotted eggs will be a sight that you will never forget. The birds are unmistakable, and when they arrive from the South they are very quarrelsome and anxious to get the home under way. If you are unsuccessful in May, you will see, when the leaves fall, that the elusive cradle was right under your nose.

OUT HOUSE-HUNTING
The chickadee looks over the housing situation.

PHOTOGRAPH BY MR. HOWES
BROWN THRASHER ON HER NEST
Carefully guarding her brood and protected by her coloration.

We have yet to remember those individuals whose typical housekeeping time is June. The zenith of the breeding season is reached by the tenth of June in the vicinity of New York City, but there is, of course, an overlapping in both directions. Some typical June nesters do nest in May, and the reverse, while second broods also upset dates at times.

In June the cuckoos make their flat platforms of twigs, and lay their blue, rounded eggs. The little ruby-throated hummingbird likewise commences its nest, straddled upon a slender maple twig, or perhaps upon a hemlock bough overhanging a rippling stream. I have often found them in the latter location, and they sometimes continue their nesting duties far into July. Spotted sandpipers bring out their wonderful little chicks in June and if one is very patient

PHOTOGRAPH BY MR. HOWES
THE PHOEBE BUILDS HER NEST
She sets up her home often in a quarry or in some cliff.

PHOTOGRAPH BY MR. HOWES
IS THE ROBIN DEAF TO NOISE?
At any rate she built her nest on a much-traveled railroad bridge.

and sharp-eyed they may be found by closely watching the lamenting parents after they have been flushed from the pond grass or the shore dune, for the young are then squatting absolutely motionless exactly where they happened to be when the mother's alarm was sounded. In a few minutes she will return to the little ones, and a few peeps from her will bring the chicks scurrying to her side. Up in the fields of short grass in the country, or upon the sand, back from the beaches, the killdeer nests often in June. The female makes a tiny hollow and lines it with little stones and bulbous rootlets according to the situation. Here she deposits four beautifully-blotched pear-shaped eggs. Her chicks run about after her like those of the spotted sandpiper, and are more beautiful.

Later still comes the nest-making of bobwhite, lasting in one case that I remember until the twelfth of August. Her nest is a cozy hollow, lined with long dry grasses and it contains from ten to twenty pure white almost conical eggs. She places it in fields of growing hay, usually by the side of a stone or bush or a stump, and here she broods closely until the beautiful little chicks hatch out. The young leave the nest the same day that the main hatch takes place, and after that time they are next to impossible to find until they are able to fly.

The mother bobwhite learns to trust a human being almost at once, as I learned one August day. The hay mower had been sent out to cut a field of rather worn-out grass in a young orchard. As the team and the machine reached a certain spot, a bobwhite fluttered out from under the blade and escaped unhurt. The team was drawn up, and a short search revealed a nest with thirteen unbroken, heavily incubated eggs, placed in a grass nest beneath a small juniper. The working knives had passed directly over the brooding bird, but the hollow in which she had placed her nest saved her and her precious eggs. Her home was shorn of the roof of grass, but on the following day, I found the lady sitting quite contentedly. I approached with my camera to within twenty-five feet of her and made my first exposure. Each day thereafter, I approached a little closer, until on the tenth day, I could work within touching distance of her feathers. She had learned to trust me completely.

It is not very often that actual nest-building reaches into August, but the goldfinch, one of the latest birds to nest, starts, sometimes, during that month. It nests usually in July, lining its grass and bark nest with thistle-down upon which the pale blue eggs look very beautiful. When this little "wild canary" has wound up its domestic duties, the nesting season is officially at an end, except for a few freaks, like the least flycatcher, whose young I have found half grown in mid-September.

August and September are really the months of moulting and quiet for most of our songsters, before they hop off once more to their winter homes. When these months have passed, fall and winter are soon upon us, and we wait once more for the warble of returning bluebirds!

A Nature Puzzle

By Florence Moore

THERE'S quite an interesting family hidden in this picture. If you find the mother first, then find the two babies. Or, if you find the babies, find the mother. She looks as if she could take good care of her children, doesn't she. If she could talk, she would say:

"I'm a carnivorous mammal, of the genus *Felis* and live in Africa and Asia. Also you will find the letters of my name spelled out in the picture somewhere, but where letters repeat, only one is given. Write the letters down as you find them, then assemble in their proper order, until you spell my name."

It would be a good idea, too, would it not, to look up the zoological meaning of the big words, such as a "carnivorous mammal."

Answer to March Puzzle
ELEPHANT

This Month's Story

For the Children

"Cinco, You Rascal!"

By Marjorie Shanafelt

WE CALLED him Cinco because he was only a nickel's worth and baptized him with a drop of red ink. His jacket looked and felt like a well-worn scrubbing brush. His feet were several sizes too large for him. He was too happy to mind when we laughed at him for he was hunting a high spot from which to survey his new home. He saw places that apparently offered good climbing; but for some reason not understood by Cinco, he just could not make any headway. You see, it was his first experience with tiers of sectional bookcase doors. When he jumped he bumped his nose and slid down to the floor. After many trials he knew something was very wrong. He sat on his haunches and wriggled his nose at the offending doors. When we lifted door after door, like a ladder, he whisked his tail and dashed up to the top where he found an empty and forgotten chalk box. He greedily grabbed all the tissue paper I threw up to him, stuffing it into his mouth, and gathering it into his arms, trying to walk and getting all tangled up in it, but managing to fall and stumble into the box with it, after all. He stamped it down and patted it, then he tried to crawl under part of it, but the box was so small and the paper so light, that as fast as he shoved under the paper it fell out over the top of the box. Time and again he climbed out and carried it back, only to have it tumble out as before. Completely exhausted he finally went to sleep without a blanket. There being no room for his tail, it hung gaily over the box edge to the delight of visitors.

At lunch time we left him asleep in his box but when we returned an hour later it was plain that Cinco had grown tired of its confines. Our lovely umbrella plant, so large that it took two people's arms to go around it! Every delicate stem was broken, every lacy top drooped low over the pot or trailed on the table. How busy he had been digging and kicking the dirt in every direction! In his adventuring he had knocked over a bottle of sticky shellac and this was running sluggishly over the scattered dirt. "Cinco, you rascal!" we scolded, but he took it for applause and dashed happily around the dirty table.

The only time Cinco was out of mischief was while he was eating; therefore he waxed fat. He was fond of tomatoes. To see him holding a tomato larger than his own head, the juice running down his chin, made the glummest person laugh aloud. He did not disdain peaches, oranges, or cherries, but mulberries were his choice. He would eat a cupful without moving, then, his paws wet with juice, he was almost certain to leap on somebody's shoulder where he left unconventional patterns. He liked dry bread, especially dry cinnamon rolls. Fresh bread he crumbled up and blew about him like a miniature snowstorm. His drinking cup was the glass beaker in which we dipped our paint brushes while coloring lantern slides. Standing on his hind legs Cinco would hang over the edge of the beaker and drink enormous quantities of pink, green, purple, or any other color of water and return again and again. After eating or drinking Cinco always wiped his mouth on the daily calendar pad.

CINCO AND HIS IMITATION TREE
The rope was his trapeze and the flower pot holds all he left of plant life in it.

Cinco had never been allowed in the north office for we had to have some place in which to put things that were not for Cinco's teeth to bite, but one noon he managed to scratch open the door which had not been se-

curely latched and how glorious was the picture that met our eyes! He sat, the little rascal, on the table of a projecting microscope, an electric microscope, and he had chewed the button that controlled it until the current had come on, so that he sat in a circle of brilliance, like a dancer in the spotlight of a theatre. Around him billowed the fuzz from some twenty cat-tails that had stood in a tall holder near by. Around him and over the edge of the table, down to the very floor the fluff hung, gently swaying in the breeze from the open window. Scattered upon this, like flower petals on the veil of a bride, were the bits of a wonderful bouquet, now but dabs of color on the white of cat-tail blanket. This time we not only said, "Cinco, you rascal," but because he had ruined a pile of valuable manuscript, we stamped our feet, and Cinco thought we were being extra-enthusiastic and frisked his tail more adorably than ever and jumped from shoulder to shoulder, pulling our hair with his little paws.

CINCO AND HIS DRINKING CUP
He would drink much water colored like the rainbow from the dipping of paint brushes.

About this time Cinco began to bury things. He would run about with a nut in his jaws, trying to pry up a board in the floor so that he might stick the nut beneath it. Unfortunately for him, the floor was well built, and his jaws would get so tired holding the nut that he would have to take it out and hold it in his dirty paws in order to rest. If he did not get disgusted and eat the nut, he ended by burying it in the umbrella plant jar. Many things he buried there, and a day came when he harvested a crop of sunflower plants, tomato plants, and cucumber vines.

The first day he spent with us Cinco discovered a log standing in a corner of the room. Although he had not been in a tree since as a wee baby he had fallen out of one, he recognized it immediately and hurried to the top of it. "Brr", he scolded, "what good is a tree without any branches?" But inasmuch as he thought it better than no tree at all we made him a bridge of it by placing one end on the window sill and the other on his flower pot. The log had an angle in it where a branch had once grown, and in this crotch Cinco buried handfulls of provisions, entirely overlooking the fact that they fell through on the floor as fast as he crowded them in.

Cinco scolded the sparrows from the window sills. When they flew away he felt that he was mighty victor and swaggered about. When something frightened him he made himself as flat as possible with his tail lying close to his back. He liked boxing matches. Racing down the table he would plunge against an outstretched hand with such force that it would send him bouncing back, stiff-legged. After bouncing up in the air a couple of times he would rush to the other end of the table to repeat the stunt again and again.

CINCO SURVEYS THE WORLD
He seemed to miss nothing and there was little he would not try to do.

Sometimes Cinco stayed upstairs with the Lady-Who-Knows-All-About-Rocks where he tried to crack rocks with his teeth and nearly stuck fast in a Canada balsam jar because he would put his head in to see what it was. Over Sundays Cinco always went home with the Lady-Who-Knows-All-About-Rocks who lived in a flat where Cinco soon felt very much at home. Cinco had always had a large sponge with which he played as does a kitten. This went to the flat with him each Sunday. The sponge and Cinco were so often underfoot that the Lady put both them into the empty bathtub. Cinco came to recognize that as the proper place to play sponge ball. One morning the faucet in the tub broke, the water ran into the tub in a stream and Cinco's sponge was fired out upon the floor. While the Lady was sending a hurry call for the plumber, Cinco scampered into the bathroom, and saw his sponge on the floor. He picked it up and with a leap went over the edge of the bathtub into some two or three inches of water. Only another squirrel could have appreciated just what Cinco thought of this.

Countless other things Cinco did, naughty things, funny things, like opening a box containing a new pink lampshade and digging it to ribbons with his little toes, and burning all four feet on some hot pipes so that he had to have his feet wrapped up in greasy bandages for a week. In time Cinco left us. He had shed his baby fur and grown sleek and wise and we knew he was ready to climb real trees. When school was out he went to live in a big, big yard in the country. He rode there in a little box carried by the Lady-Who-Knows-All-About-Rocks, who was taking him to her father who is an invalid. Cinco is very happy for he not only climbs and romps in the tree-tops but he comes down to eat nuts on the knee of the man who sits in a big chair right under the rustling trees. Not only that, but the man's soft voice is very often heard saying to Cinco's own delight, "Cinco, you rascal!"

We wonder sometimes if he misses his flower pot garden, and all the mischief-making playthings of his baby life. Anyway we feel that his new home is more suitable for a truly grown-up squirrel able to make his way.

Planting and Care of Trees and Shrubs

By Arthur Newton Pack
(illustrated by Garnet Jex)

FOREST PLANTING IS VITAL
Eighty million idle acres must be put to work like these shown here.

CAN you imagine a world without trees? Yes, very easily, for you at once see a desert in which nothing can live. Do you realize that the human race would pass from the earth were it not for trees? The tree-planter plants for those of tomorrow, not for us of to-day. He looks into the future, as any man or any nation must that wants to leave the world a bit better than he found it.

Whether you are planting trees and shrubbery to beautify your home; whether you are doing it as a member of a city shade-tree commission or committee for parks, sanctuary, or town forest, there are always some useful points to keep in mind. The two normal seasons for planting deciduous trees are spring and fall. The advocates of either season have many arguments to advance, but as a rule it is safe to say that all trees except evergreens may be planted at any time during the dormant period and when it is possible to work the soil, namely, when it is not frozen. This period begins with the dropping of the foliage in the autumn and ends when the buds burst open in the spring. The experienced planter will find the early spring better for tree planting in the northern states. Evergreens are usually planted in late spring and during the latter part of August and the first part of September.

Regardless of how thoughtfully the trees have been selected and how thoroughly the planting has been done, there remains intelligent care to be bestowed in order to have them live and thrive. Many planters have been disappointed with the results of their work because they considered their job completed when the last shovel of soil was placed around the tree. Trees in situations exposed to strong winds, and always along streets should be staked with a strong pole reaching up to their first branches when the pole is driven into the soil two feet in depth. In addition to the stake, street trees need some sort of a guard. There are many types of guards on the market, and examples of good types may be found in any progressive community. Trees planted in groups and receiving natural protection will not need a stake to maintain them in an upright position.

In the Middle West or other districts where there are hot winds during early summer, the surface of smooth bark trees such as the linden or basswood will need protection of their trunks or main stems. This protection may be afforded by plastering with a thin coating of mud, winding with burlap or other cloth, or by the use of tar paper. In almost every section of the country the soil around the base of newly-planted trees will need some cultivation the first year or two during the drought season. If trees are planted in large groups ordinary cultivation may be given. When the trees are planted as specimens or are scattered, such as along the street, digging of the soil in a circle around the tree to a depth of three or four inches will aid the tree in its growth.

In order to conserve the moisture in the soil around newly-planted trees the ground may be mulched with leaves, straw, litter, or a layer of dust formed by stirring and pulverizing the soil to a depth of an inch. This will obviate watering in most cases. Only under rare conditions will it be necessary to water or irrigate trees when mulching is practiced. Of course, this does not apply to the districts where all cultivated trees must be artifically watered by irrigation. As trees grow they will need pruning. This annual requirement can be met by going over the trees during the summer when the amount of top to be removed can be more easily determined than in the winter months. The winter is a favorable time for pruning, however, and is devoted to this work by many city foresters. The amount of pruning is one of individual judgment, but should be based on the shape

THE WOODLOT IS A GOOD INVESTMENT
The idle acres on the farm can be put to work, supplying wood and weather protection.

THE WRONG WAY TO PRUNE

NEWLY-PLANTED SHRUBBERY SHOULD BE CUT BACK QUITE SEVERELY

This reduces the number of buds and the demand for nourishment and tends to make the growth much more vigorous.

of the tree desired.

As for shrubbery planting—the best results are had when the planting is done in beds or groups. Shrubs grow best when in the companionship of others. Compare plants placed individually in the sod with those in a group which enjoy the cultivation of a deep hoeing or spading once or more each year.

If shrubs are to be arranged in groups or colonies, the area that they are to occupy should first be thoroughly spaded as if for flowers, after which the planting may be done in the usual manner.

Newly-planted shrubbery should be cut back severely at time of planting. This treatment reduces the number of buds to be supplied with nourishment and has a tendency to make the growth much more vigorous than if it were not so pruned. Generally from one-third to one-half of the top should be removed. While this may seem to spoil the shrub, it really is the making of it. The plant will be more bushy and can be trained, as it grows, into the shape desired.

When shrubbery is planted in the spring this trimming is perhaps most easily done before the shrub is set in the ground. When planted in the autumn it is usually best to defer the trimming until early the following spring.

A privet hedge should be planted several inches deeper than it stood in the nursery, then trimmed severely back. The more severe the trimming, the denser the resultant hedge.

People plant trees not only for their beauty, their shade, and their ornamental value, but also because they appreciate the importance of reforestation. We have in this country today more than eighty million acres of idle land, once forested, but now producing nothing, even being unsuitable for ordinary agriculture. What, you may ask, has the planting of a tree got to do with all of this? Nothing, if you do not catch the inspiration of the tree's message.

When the Indians roamed our country and lived from the products of its soil, they were accustomed to let Nature produce their food crops. This was haphazard and uncertain, and much too slow and inadequate for the white man with a growing nation to feed. He had to plant his crops in order to get the most from the land; to plant them in order to get the best results; to improve the seed and

METHODS OF PRUNING AND PLANTING SHOWN

Dotted line, crosses and black line show different pruning methods. Figures refer to box on opposite page.

SHRUBS GROW BEST WHEN THEY HAVE THE COMPANY OF OTHERS

The area should first be thoroughly spaded as for flowers, planting then following in the usual manner for shrubbery.

THE RIGHT WAY TO PRUNE

refine the quality of his foodstuffs for the consumers.

With our forests we have, in most sections of our country, reached the point where we must regard them as crops. We must plant them as a crop. We must grow them on idle acres in such a way as to get the most from these acres. We must produce the best trees and a continuous supply of timber. This process is known as reforestation.

To-day the Federal Government, the State Forestry Departments, forward-looking lumbermen and various wood-users are reforesting. But it need not stop with these. In fact, it does not. Boy Scouts, Girl Scouts, Camp Fire Girls, women's clubs, civic groups, and a variety of organizations are reforesting. Towns and cities are doing their part in creating community forests on their idle lands and on the watersheds of their reservoirs. Wise farmers are setting slacker acres to work growing woodlands. Fish and game clubs are planting areas to serve as sanctuaries and to protect the streams. Land owners are beautifying and making more valuable non-working acres among their holdings. Reforesting is not only essential but profitable.

Reforestation is not an occult science reserved only to the student and the specialists. Suppose you were to undertake planting a tree crop, what should you do as a start?

Probably your chief reliance will be the State Forester. Almost every state now has such an official with headquarters in the State Capitol. He is in a position to give advice and, in many cases where the state is progressive in Forestry, to give definite assistance. Several states, including New York, Pennsylvania, Massachusetts, Indiana, Ohio, and others, can supply seedlings free or at cost from the state nurseries. The State Forester should be asked about this. In a number of states, also, there are special tax exemption laws for lands growing timber and inquiry should be made about these.

Your trees should be planted when growth is sleeping in them, that is, in the spring, when the frost is out of the ground and before the season's growth begins, or in the fall after they have gotten their year's growth. This varies in various localities and your State Forester can advise you.

In planting the trees you should give each young member of your forest crop a space of about six feet around it in all directions. It may not seem to need it when you put it into the ground, but soon it will have competition from its neighbors. About 1,200

FOURTEEN POINTS FOR TREE-PLANTERS

1. *A piece of burlap or canvas should be spread over the grass, so that the dirt from the holes may be thrown upon it.*
2. *Holes must be made large enough that the roots may be spread out naturally without cramping. See also No. 6.*
3. *Dig holes larger in circumference at the bottom than at the top to prevent water lying about the roots.*
4. *Good, fertile top-soil must be used about the roots. If the tree is to be planted in impoverished ground, good soil should be provided for it.*
5. *Plant the tree the same depth it stood at the nursery (easily determined by the dirt ring on the trunk). This is very important.*
6. *Lay the roots out naturally and cut off all the broken or bruised parts. See also No. 2.*
7. *Press the earth down firmly, embedding every particle of roots and working it in under the crown.*
8. *With small trees the dirt will settle firmly if the plant is moved gently up and down as the hole is filled. With large trees use tamping stick.*
9. *Pour in water to top of hole after filling three-quarters full with earth. When this is settled complete filling-in process, leaving top soil loose.*
10. *Trim broken or bruised branches, also small branches and limbs back to next largest stem. See diagram.*
11. *It is often best not to trim the leader or central stem, as a forked tree may result. Hardwood trees, like the oak and beech especially, should not have their central leader trimmed.*
12. *Large trees or trees in exposed places should usually be staked. To prevent chafing, protect the tree with old hose or with burlap and sticks where the wire is attached.*
13. *After planting, it is better to leave a cultivated area about the tree than to sod close to it. This cultivated area should be from three to five feet in diameter.*
14. *Fertilizer, as manure or compost, may be used either in the bottom of the hole or as a mulch, or both. Be careful not to allow manure to come in direct contact with the roots.*

trees to theacre is usual.

As soon as you receive your trees, be sure you unpack them and get them temporarily into the ground. This can best be done by digging a trench about six inches deep (if they are small trees) and "heeling" the bundles of small trees in by packing dirt about the roots and watering them if the weather is dry.

"HEELING" IN THE NEW TREES
It is important to get them unpacked and into the ground when they reach you.

The forest planting then can follow, usually being done by at least two persons. One, armed with a pail of water containing small trees and a hoe that will dig a hole about the size of a tomato can, goes ahead. The hole is dug and the soil from it left handy to be packed around the young tree by the person who follows. These directions apply to transplants, and the smaller seedlings can be put in by cutting a wedge-shaped slit in the soil and pinching the soil about the tree.

For forest planting coniferous or evergreen trees are largely used. They grow quickly, are relatively free from disease, and a large number can be grown per acre.

So many people are fond of the great outdoors and love to see the hillsides kept green that the question of forestry needs no argument. People plant trees not only for the investment, that is, the money return they may secure from them, but also for the beauty of their appearance, for their welcome shade, for the protection of the hillsides, to maintain a pure, finer and clean supply of water, to serve as a nesting place for the birds and game and little wild animals, and for the innumerable purposes by which trees and forests serve humanity.

The future prosperity of the country depends largely upon forests. It is therefore our patriotic duty to pass on to succeeding generations the heritage which our ancestors gave to us. We must not allow these valuable forests to be devastated by destructive methods or by wanton neglect. We must not permit immense areas of land fit only for forests to remain idle when it may be made to produce the trees so badly needed. We must plant.

The Clown of the Zoo

THERE seems to be a theory among the keepers of several zoos that monkeys are the most treacherous of all animals. not excluding the leopard that has hitherto held the world record in this respect . . . at least in the popular fancy.

However. there are individuals among the race of monkeys that command the friendship and often the love of their attendants, and evidently Sultan and Marianne. of the Philadelphia Zoological Gardens are at the top of the list to judge by their benevolent aspect over the cups that are cheering them.

SULTAN AND MARIANNE ARE THIRSTY
Two tenants at the Philadelphia Zoological Gardens who seem to belie the treachery of monkeys.

A keeper at the Washington Zoo who has tended all varieties of monkey for twenty-four years, states that though a mandrill or white baboon may let you pat him as you go into the cage, they may also "jump you" without a moment's warning. It is exactly as though you were caring for a bloodthirsty tiger. In fact, another keeper who had been fast friends with a mandrill for seven or eight years was suddenly struck by the animal with a stick and knocked unconscious.

The point is, a man may try to conceal his feelings; but a monkey, never. If he feels a bit blue after breakfast, he picks up a stout cudgel or a heavy wood ball, and the first person that crosses his path—bam!

The Herdsman in The April Skies

By Isabel M. Lewis

BOOTES, now visible far over in the eastern sky, may be easily recognized by the kite-shaped figure formed by its principal stars and by its brilliant, reddish-orange star, Arcturus, which is one of the finest stars visible in the northern hemisphere, equal in brightness to Capella, now over in the northwest, and Vega, soon to appear above the northeastern horizon.

Although Bootes is generally known as The Herdsman, the name really means Ox-Driver. As the seven stars in Ursa Major were often called the Seven Plow-Oxen this would seem to be a much more appropriate name for this constellation. Hevelius, the Polish astronomer of the Seventeenth Century, represented Bootes as a hunter pursuing the Great Bear around the pole, attended by Canes Venatici, the Hunting Dogs — Asterion and Chara by name, which are represented by the two stars west of Bootes and south of the tail of the Great Bear, which is also known to us as the handle of the Big Dipper. Arcturus may easily be located by prolonging the handle of the Big Dipper or the tail of the Great Bear, whichever we prefer to call it, toward the southeast for a distance about equal to the extent of the Big Dipper.

The often-quoted passage in Job, "Canst thou guide Arcturus with his sons?" is said to refer, not to this star, but to the seven stars in Ursa Major. In the revised version the passage is translated, "Canst thou guide the Bear with her train?" that is, the mother Bear followed by her little ones, which are the three stars in the handle of the Dipper.

Arcturus is one of the stars nearest the earth, its distance being about thirty light years or one hundred and eighty trillion miles. It is also one of the giant stars, with a diameter estimated to be close to twenty million miles, and one of the cooler stars, as are all the reddish and orange-colored stars. Measurements of the radiations from this star show that the temperature of its surface is about seven thousand degrees Fahrenheit, while that of our own sun is about eleven thousand degrees Fahrenheit. Of course the temperatures of the interiors of the stars are very much higher, running, it is believed, into millions of degrees. Hot, you will agree!

Arcturus is not only one of the nearest stars but also one of the most rapidly moving stars. If all the stars were moving through space as rapidly as Arcturus the appearance of the constellations would have changed considerably in the past two thousand years, for in that time Arcturus has moved across the sky an angular distance of about one-half a degree, which is about the same as the diameter of the full moon. A change that great in the positions of all the brightest stars would be quite sufficient to alter beyond recognition, the outlines of many of the most noted consellations. As a matter of fact, though, most of the stars have changed their relative positions so little since the days of the ancient Greeks and Romans that the forms of practically all of the constellations are the same to-day as they were several thousand years ago.

TO USE, HOLD OVER HEAD WITH TOP TOWARD NORTH

Not only is Arcturus, then, a star that is to be remembered for its great brilliancy and distinctive orange color, but also for its nearness to the earth, its rapid motion and its great size. Throughout the spring and summer and far into the fall it will continue to be conspicuous in the evening sky, admired by many even more than the brilliant, diamond-like Vega or the golden tinged Capella.

Before the month of April ends Taurus and Orion will disappear from view in the western sky soon after the setting of the sun, to be seen no more in the evening sky until fall. Hercules and The Northern Crown, however, now come into view above the northeastern horizon.

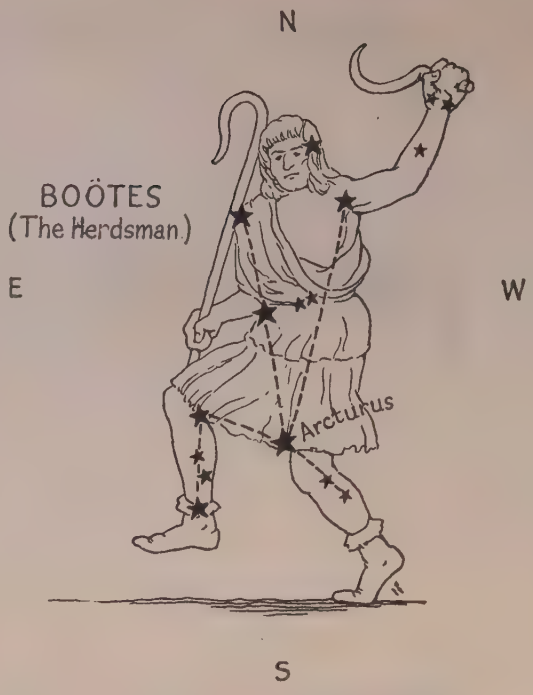
Bootes and Virgo with their brilliants, Arcturus and Spica, are now well in view in the east, while in the south and southeast appears the huge form of Hydra, The Water-Snake, with its riders Crater and Corvus. The Snake's head is marked by a group of faint stars south of Cancer and southwest of The Sickle in Leo, and its tail is lost to view beyond the southeastern horizon.

Auriga and Gemini are still high in the western sky, and Leo, The Lion, is now nearly due south while the Big Dipper in Ursa Major swings high above the pole in the north as Cassiopeia sinks toward the northern horizon. Train your telescopes on these figures in the sky.

Venus is now conspicuous in the northwest for more than two hours after sunset and, as always, outshines all other objects in its splendor. On the fifteenth of April it will be almost due south of the Pleiades in Taurus.

Mars passes from Taurus into Gemini this month, and although it has lost its unusual splendor in the past two months it is still very noticeable in the western sky, easily recognized by its deep red color. It is now more than 150,000,000 miles from the earth and steadily decreasing in brightness as it recedes from the earth. To see Jupiter one must be up before the sun as this planet is now in Pisces and low in the southeast at sunrise.

Mercury reaches its greatest distance west of the sun on April tenth, but it will take a sharp eye to find it at that time in the morning twilight in the southeast and quite close to the horizon. A field glass might aid one in finding it but this is not a very favorable time to observe this elusive planet.



FOR YOUR TELESCOPE THIS MONTH
This constellation offers an interesting field of study, particularly the star Arcturus.

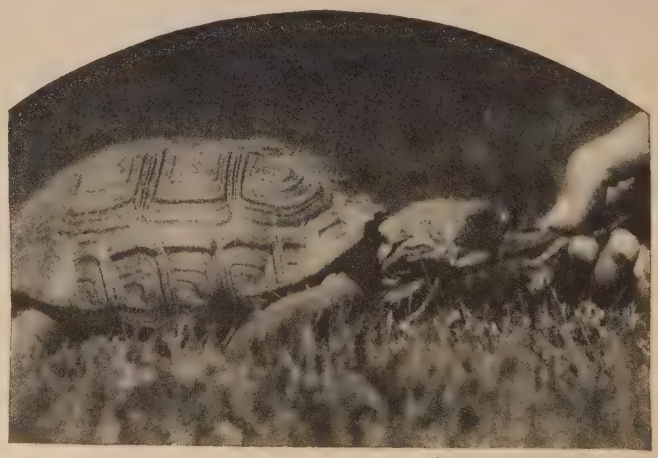
Saturn is now visible during the greater part of the night rising very shortly in the southeast in Scorpio. It will be found a short distance to the north of Antares, the deep red star in Scorpio.

The monthly sky articles have been appearing in Nature Magazine for nearly three years, being varied for a year by placing particular emphasis on some constellation. If there are any of our reader-astronomers who have any suggestions to make about these articles they will be appreciated.

Thor—A Desert Tortoise

By John Scott Campbell
(Aged 13)

A HUNDRED years or so ago, out on the hot Arizona desert, a baby tortoise was hatched and designated from a thousand other tortoises to lead a part of his life with humans. After a long and more or less quiet life in his native environment, he was discovered by tourists en route to California during the great rush of 1923. The tourists had heard that the Arizona deserts were infested with poisonous reptiles. Here was one of them—surely—and for the sake of humanity he must be killed before they went a step further! So these heroes armed themselves with clubs, rocks and axes, in case he should spring at them, and prepared for the task.



PHOTOGRAPH JOE FORKNER

THOR WILL MUNCH LETTUCE FROM ONE'S HAND.
He will open the door when he wants to go out and signal when he finds it locked.

It happened, just at this moment, Mother, Dad, and I drove up. What was the excitement? Why had these people stopped? A rattler, surely. We would stop and see.

Meantime the tortoise kept still, his head and feet pulled tightly into his house. What these humans intended to do with him he didn't know, but he was sure they didn't mean any good. Then he heard a lady scream, "Look out, he'll poison you!" He was picked up and taken to our car, and so we have kept Thor, as we named him, since then, for no reason in particular.

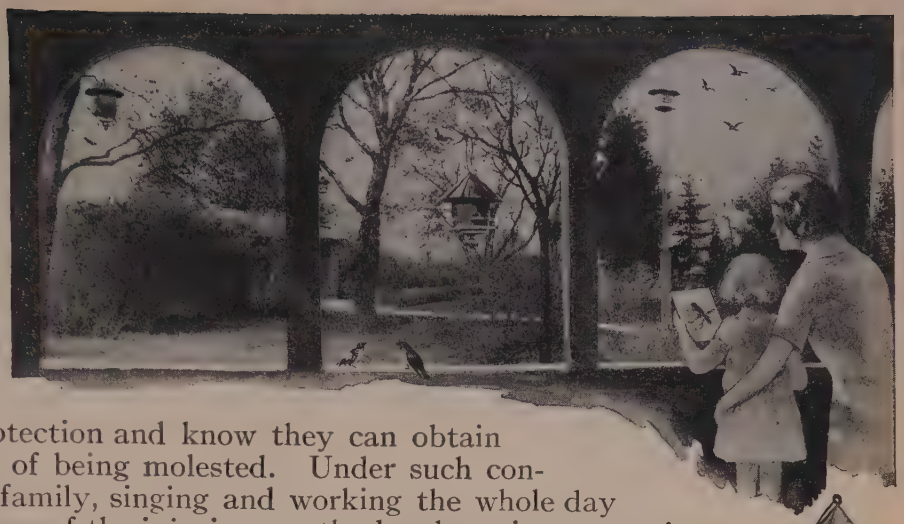
At first he kept his head in his shell continually and would eat only when alone. But now he will stick out his long wrinkled neck and stare at anything, even street cars. He will eat lettuce leaves out of my hand and will turn his head towards us when we speak. We can leave him on a table or shelf or chair all day and he will only peer over the edge. Green turtles I have had will foolishly scramble about and fall off any place.

Thor always goes to the door when he is hungry and if one outer door is closed he will turn and go through the house to the other. In the summer he will push the screen door open. If it is locked he will try to open it and then will make a whistling sound to call our attention.

There is a mystery connected with Thor. When we picked him up on the desert he had a small hole drilled in his shell just above his right hind leg, with a piece of wire in it. At some time he must have lived with man—but who? He might have escaped from his captors a week before we found him—or he might have been the

(Continued on page 265)

"How Beautiful Song Birds Can Be Lured to Your Garden"



Birds abide where they feel protection and know they can obtain food and drink without danger of being molested. Under such conditions they raise family after family, singing and working the whole day long, ridding the gardens and trees of the injurious moths, beetles, mites, mosquitoes, and other flying insect pests that not only annoy you but destroy your beautiful trees, shrubs and flowers. Invariably a Dodson House placed as directed will get a colony of beautiful Martins and sweet singing Wrens. Bluebirds and Flickers take naturally to Dodson's Scientifically made houses. The beautiful Cardinals, Thrushes and dozens of others of our beautiful Songbirds will seek your garden if the kind of shelter and food they like is provided. Once you know the joy of bird friendship you will regret the years of pleasure missed.

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A Song Bird Lover
for over 40 Years
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Joseph H. Dodson (The Bird House Man)
Making friends with a Black Capped Chickadee at his Kankakee Bird Sanctuary

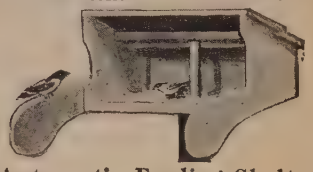
Free this fascinating book "Your Bird Friends and How To Win Them" sent to anyone who loves our beautiful songbirds. Full of things you should know. Based on a lifetime of close bird life study.

Flicker House

Is a sure lure for these very useful birds. Trees in cities are so well taken care of that Flickers have difficulty in finding homes. They, therefore, take very readily to Dodson's Scientifically Built Houses. Flickers are one of the most useful birds, destroying moths, tree pests and principally ants on trees and ground. Many letters have been received stating that ants have mysteriously vanished since these birds have found homes. House 26½ in. high by 12 in. in diameter. *Only* **$7.00.**

Dodson Scientific Wren House as shown above

The Silver Throated Wren is one of our sweetest singers. A four-compartment house satisfies their habit of changing nests for each of their three broods. Beautiful design, made of oak, finished in green with cypress shingles, copper coping, comes complete with rust-proof snap-on hanger. Size 28 in. high by 18 in. in diameter. *Price* **$7.00**



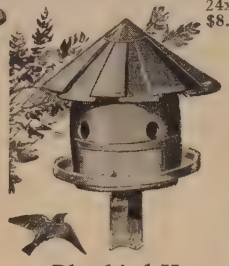
Automatic Feeding Shelter

stocked with a few simple foods (as described in free book). Lures songsters from the whole neighborhood. Automatically revolves like a weathervane to protect birds from storms. Everlasting redwood, finished in green. Size 24x22x12 inches including 8 ft. pole **$8.50**; with copper roof **$11.00.**

Write for our big catalog of art stoneware furniture.

Bird Bath

This handsome stoneware bath is not only an ornament to any garden but is the only one where knowledge of the birds' habits, fears and preferences have been considered in designing a bath that the birds enjoy and use. Complete with 32 in. stand. *Price* **$26.00**; without stand **$14**



Bluebird House

The happiest and most beloved Songsters. Dodson's Scientific houses satisfy these most exacting birds. Made of oak, finished in white and green. Sizes 21 in. high by 16 in. in diameter with 14 ft. easy raising and lowering pole. *Price* **$14.00**

Queen Anne Martin House

of 48 rooms. This beautiful house with its specially ventilated garrets, porches and other patented details has proven a sure lure for these most useful and fascinating birds. A large house size 36x 26x37 inches; copper roof, including 22 ft. easy raising and lowering pole only **$60.00.** Others as low as **$18.00.**

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Mrs. Elizabeth K. Peeples, of the Washington, D. C., Schools.
Prof. L. D. Wooster, Kansas State Teachers College, Hays, Kansas.
Miss Clelia Paroni, Supervisor of Nature Study, Berkeley, Calif.
Dr. Bertha Chapman Cady, Girl Scouts, Inc.

A Bird Tragedy

Prof. L. D. Wooster of Kansas State Teachers' College, Hays, Kansas, reports unusual behavior and destruction of birds in many parts of Western Kansas on the evening of December 8, 1926, during a snow storm.

The birds, he says, were either Alaskan or Lapland longspurs with a few horned larks among them. The longspurs nest in the Far North, and spend the winter in the plains region. They had been in western Kansas some time before the storm came; in other words they did not come in ahead of the storm.

Such birds tunnel under snow, leaving an opening, but snow falling over them would smother them. The storm began at night while the birds were asleep on the ground. They flew up in the darkness, became confused, and headed toward the lights of towns. There, in unnatural surroundings, they struck against wires and buildings, or continued a terrified flight until they fell to the ground from exhaustion.

Prof. Wooster would be glad for information from all places where the birds were seen on the evening of December 8 under the circumstances mentioned. Can any of our Kansas members report any such observations.

Children's Tree Nursery

Mr. Fay Welch, director of a summer camp for young boys and girls at Tanager Lodge in the northern Adirondacks, writes that last summer the children became intensely interested in developing a camp nursery, which they stocked with small balsams, pines, spruces, cedars, and birches. They also "potted" little seedlings in wax paper cups to plant at home when they left camp. Many of the campers adopted "tree friends," that is, trees around the camp that they were particularly anxious to befriend. This they did by careful pruning, removal of interfering, inferior species, deflecting trails, and doing other services for the trees.

WHO'S WHO IN NATURE STUDY

L. D. Wooster

After having taken all the science offered in high school and college, says Professor Wooster, head of the Department of Biological Sciences at the Kansas State Teachers' College, he found himself in the by no means unique position of being unable to name common plants, rocks, birds and insects. A resulting sense of having missed something, a few months of outdoor life with an engineering outfit in the Colorado mountains, and the example of his father, who for fifty years or more has been a science teacher, crystalized his desire to see science teaching "naturalized." This view he has carried to his work at Hays and gradually the schools of western Kansas are being "manned" by teachers who have been in these classes. Professor Wooster wants to see a Nature corner in every schoolroom in Kansas.

A New Nature Page

The Girl Scout Leader, published by Girl Scouts, Inc., announces a new Nature page for the ensuing year, beginning in the January number. Dr. Bertha Chapman Cady, Girl Scout Naturalist, is conducting it; and her suggestions and seasonable Nature projects for troop work will provide a monthly page of especial interest to Nature enthusiasts.

International Camp

Plans are being formed by the International Council in London for a camp for Girl Guides and Girl Scouts, to be held, probably in Switzerland, for two weeks, between the 15th of July and 15th of August, 1927. More definite information will be furnished later from Girl Scout Headquarters.

Camp Fire Bulletin

No Nature Study teacher can afford to be without a copy of the January, 1927, *Guardian,* the bulletin of news and suggestions for leaders of Camp Fire Girls. 1927 is tree year in the Camp Fire organization, and the magazine mentioned is so full of suggestions and information in the line of possible activities as to be a veritable treasure trove. Address, Camp Fire Girls, Inc., 31 East 17th St., New York City.

Nature Study Camps

Pennsylvania State College announces Intensive Nature Study Camps, June 25 to July 16, 1927, and July 16 to August 5, 1927. College credit will be given for the courses. Nationally known Nature specialists will lecture. For reservation or further information address Prof. George R. Green, Department of Nature Study, State College, Pa. An ideal site has been selected for the camp.

Hints and Helps for Home and Garden

(Continued from Page 218)

Be careful not to plant too deeply. We are not usually warned against this danger, but deep planting does more harm than good with most plants and is beneficial only in cases of very light, sandy soil. Iris needs only to have its roots in the soil, and comparatively shallow planting is successful with gladiolus. Deep planting of peonies and roses retards growth and weakens the plants.

It is high time to prune grapes. Remove all superfluous and weak growth to throw the strength of the vine into the main stem and side branches. If the vine is growing on an arbor, train the main side branches along the supports, tie them well and remove other canes. Do not worry if the sap drips from the cuts made late in the season. This bleeding does not seem to injure the vine.

Remove enough of the mulch on the strawberries to enable the plant to breathe freely, but leave a little on the bed to keep the berries clean and free from sand and earth. If the mulch which has been removed is placed between the rows, it tends to prevent the growth of weeds and helps to keep the earth moist.

Dr. Nelson Retires

Confronted by the rich results of a lifetime spent in the study of birds and mammals and the desire to devote himself to assembling this information, Dr. E. W. Nelson, Chief of the United States Biological Survey since 1916, requested the Secretary of Agriculture to relieve him of the responsibilities of the office. His request has been regretfully complied with and Paul G. Redington, Assistant Chief of the United States Forest Service in charge of Public Relations, has been appointed Dr. Nelson's successor, the change effective May 9.

Dr. Nelson has been with the Department of Agriculture for thirty-seven years, and previous to this association traveled widely in the prosecution of scientific research. He is the author of many monographs and several books and numerous articles of lesser scope, and has given his best to the development of the Survey to its present eminence in the scientific world.

Waterlily Blooms Reveal Nature's Loveliest Colors

Glorious colors distinguish the Tender Waterlilies. Every morning brings new charms; every day makes the richly colored blooms more fascinating. Nor are Waterlilies difficult to grow. Sunshine, water and a little pool or tub will give more joy, with far less labor, than a garden of annuals. Tender varieties should be set in May or early June; in five or six weeks they will be in full flower.

Tricker's Waterlily Booklet

Pictures eight varieties in color—purple, pink, yellow, blue, white. In this booklet I tell how to build a pool, how and when to plant Waterlilies, and how you can easily have these lovely flowers in your own garden. Send today for a copy.

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IMPORTED GRANULATED
PEAT MOSS
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Then spade it in: NOW is an ideal time when ground is easily worked. Get immediate results. Peat Moss is clean, odorless, free from weed seeds, holds moisture, liberates plant food. Accept this offer, and test it. We will deliver postpaid a garden bale for $1.50 and will include

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A clean, odorless, Plant Food

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A book that will solve all your difficulties in selecting, ordering and planting. Our entire attention is devoted, year in, year out, to growing:—

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Highest quality plants shipped from the Appalachian Mountains in any quantity. For specimen and special planting we furnish nursery-grown stock from our Stroudsburg nursery. **Old English Boxwood.** Rare specimens, 2 to 7-ft. spread, now available. | **Our General Catalog** mailed on request.

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Box 65-N **Stroudsburg, Penna.**

Mr. Redington, in his Forest Service work, has been closely in touch with the wild life administrative phases of the service, an experience that will be valuable in his new post. His administration of the California district office of the Forest Service was notable in its achievement and in its appreciation of the importance of public education to the forestry issue. He has admirable executive experience combined with a scientific background and linked with an appreciation of the need of presenting the scientific activities of the Government to the lay public in understandable form.

Stuart Is Appointed

Guarantee of the continuance of the work of public education to the importance of the forestry issue is continued in the appointment of Major Robert Y. Stuart as head of the Public Relations Division of the United States Forest Service to succeed Mr. Redington. Mr. Stuart, formerly with the Forest Service, has been Secretary of the Pennsylvania Department of Forests and Waters under Governor Pinchot. His administration of that office has been notable and the extension of the Pennsylvania forestry activities under his direction equally important.

Summer School

Under the direct supervision of the New York State Museum and the Buffalo Society of Natural Sciences, a six-weeks' session summer school for adults interested in the sciences will be held in the Allegany State Park this summer. The details are being worked out by Dr. Charles K. Adams, Director of the State Museum. It is expected that most of the instruction will be given in the field and that the session will begin early in July. Information can be obtained from the Buffalo Society of Natural Sciences, Buffalo, New York.

Alpine Club Meets

Among the resolutions passed at the recent meeting of the Pennsylvania Alpine Club committees was one which declared that the members of the club "will get solidly behind the recent legislation for the prevention of the destruction of our wild flowers and shrubs and will urge that all churches, halls and others will use artificial greens for Christmas decoration, in order that our mountain laurel and rhododendron shall not be exterminated."

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Box 458 **New Lebanon, N. Y.**

Katydid Egg-Laying

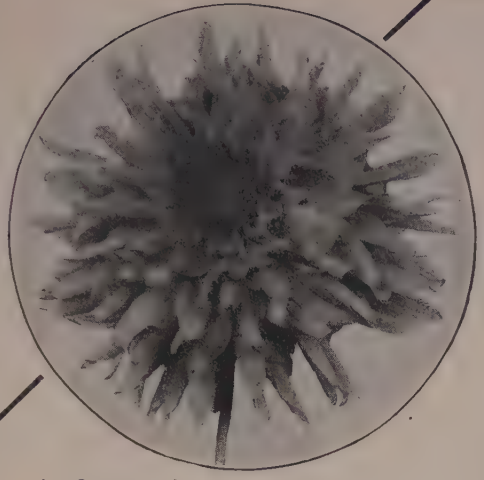
Miss Ruth Ingraham of Los Altos, California, sends us the following account of a Katydid guest which is of such interest that we gratefully publish it. Miss Ingraham writes:

"Here are Katydid's eggs laid in the fold of a time-table, in which she made careful and laborious incisions with her blade-shaped ovipositor, right under my astonished eyes as I sat at my desk writing, one September evening. She had crawled out of an open letter in my basket, having evidently chosen, at some point of my walk through the fields from the post-office, to come home with me. She went slowly about the desk, carefully examining everything with which she came in contact, and at one time approached me, gazing at me so steadfastly with her mild and melancholy eyes that I almost felt as if I had been spoken to. From time to time I watched her through various lenses. She was a beautiful creature, light green in color, two inches or more in length, quite perfect so far as I could discover, and quite lively in resisting my efforts to take her and put her outdoors. She had finished with the time-table and was exploring a pigeonhole, when at last it became so late that I was falling asleep at my post, and had, reluctantly, to give up wtaching her.

"Whatever made her choose indoors instead of out, and dry paper instead of green leaves, I can't imagine, but it was a very interesting experience for me. Look at the eggs under a high-power glass and you will see how Katydid split the paper itself so that the eggs are partly incased by its fibers."

Adventurers Wanted

Are there among the members of the American Nature Association a physician and a linguist in Spanish who would like to make a five thousand-mile cruise in a seventy-foot power yacht from Florida to California? We have a letter from Edward H. Blade, whose address is Yacht Ethelsa, West Palm Beach, Florida, saying that two congenial fellows, preferably with the above specifications, will have the opportunity to make the trip. Mr. Blade provides the yacht and crew and the individual expenses would be between five and six hundred dollars for the two or three months of the trip. There will be seven in the party, which will sail not later than the last of April.



Another great Dahlia from "Sanhican Gardens"

"Edna Ferber"

A flower of tremendous proportions, filled to the center with its delicately curved and twisted petals.

In color it is an attractive shade of salmon-orange, with a somewhat lighter rosy pink reverse.

As an exhibition or Garden flower.

its great size, delightful form and attractive color are augmented by its vigorous growth and long, upright, sturdy stem. One of the most admired and conspicuous blooms in the many exhibits we staged last year which incidentally added 5 more gold medals to our former enviable record.

Plants $5.00

Those who grow Dahlias for home garden or exhibition, will wisely confine themselves to "Sanhican Gardens" introductions, for they have, in three successive years, surpassed all other exhibitors' awards at leading Eastern shows. Our former introductions **"Trentonian," "Margaret Woodrow Wilson," "Margaret Masson,"** and others were frequent prize winners at shows all over the U. S. in 1926.
All these, with several other striking beauties of recent introduction are fully described in our catalogue—the leading one of its kind, mailed free to all who request a copy.

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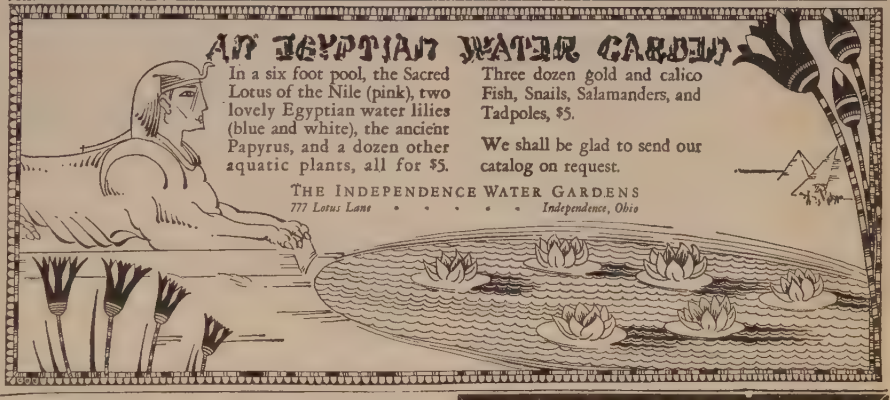

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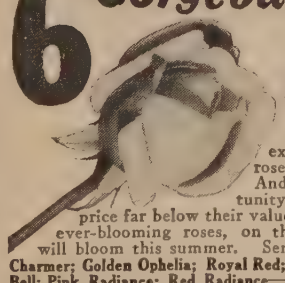

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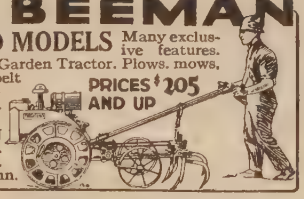

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Camp Fire Plays, Musical Comedies, and Revues, suitable for high school and college presentation.

Black Hawk Hikes

"No! No! we never PICK wild flowers. That would be vandalism. . . . The barbed-wire fence and the gate belong to the Hiker's best friend —the Farmer. Treat him—and them—with utmost consideration. . . . Bring a camera. Beg, borrow, buy, or make one yourself—but BRING it." These are the wise prefactory notes to the announcement of the hiking schedule of the Black Hawk Hiking Club of Rock Island and Moline, Illinois, and Davenport, Iowa. The hikes listed are alluring, and anyone in the vicinity with the hiking urge should get in touch with John H. Hauberg of Rock Island, president of the club.

Trails For Adults

So successful and widely appreciated was the Nature Trails idea worked out in 1925 by Dr. Frank E. Lutz of the American Museum of Natural History, that demand has arisen for the extension of the work to provide instruction for adults. The Commissioners of the Palisades Interstate Parks, therefore, announce that Dr. Lutz and Major W. A. Welch, general manager of the park, are to establish similar Nature trails for those of older intelligence and with some basis of scientific knowledge to begin with. A hike through Harriman State Park this summer will be a delightful liberal education in Nature.

California Parks

Three bills are before the California State Legislature which, if passed, will effect efficient administration of the present disorganized park properties of the state by placing under one commission all parks, public camp grounds, monument sites, landmark sites, and sites of historic interest owned by the state of California, with the possible exception of a few parks within the limits of incorporated cities.

An Original Idea

The Denver Mountain Parks and Protective Association is certainly to be commended for the fine work which it is accomplishing in the way of protecting the flowers of the Colorado parks area from the depredations of vandals. A form letter is sent to the owner of a car, stating that a car bearing the license number of his machine, on a stated date, was observed in the Denver Mountain Parks with a quantity of wild blossoms in the possession of one of the

DELPHINUIMS

The best blue hardy perennial. I grow only the wonderful new hybrids of Vanderbilt Diener and others. They are miles ahead of the old forms. My exhibit at the Boston Gladiolus Show last year created a sensation. Strong 1 year plants that will produce wonderful bloom this year, $3.00 per dozen.

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See Inside Cover for Association Work

occupants. The letter proceeds to state for what the Association stands and asks for the future cooperation of the recipient. It is believed that this original and personal manner of enlisting the sympathy and help of thoughtless people in the preservation of all wild life in the parks will be productive of much good.

For Bird Haven

For more than one-half a century Robert Ridgway has devoted himself to the service of science, especially ornithology and botany. Without thought of monetary reward he has given himself to the work and created tremendously in the interest of those who will follow. About twenty years ago he purchased eighteen acres in Illinois, near Olney, where all the native trees and shrubs have been planted and on this he has lavished the benefits of his knowledge and his care. The time has come when he can no longer give this area the attention he wishes and he is willing to deed it to some organization that will perpetuate the tract, known as Bird Haven. Out of this opportunity the Ridgway Bird Haven Association has been created with an administrative board of five, made up of Dr. Frank M. Chapman, Dr. T. Gilbert Pearson, Mr. Harry Harris, Mr. O. M. Schantz and Mr. Frank Brassie. This organization seeks to raise $35,000 to furnish an income to provide permanently for the care and upkeep of Bird Haven as a memorial to the achievements of Robert Ridgway himself. The general committee for the raising of funds consists of Dr. Harry C. Oberholser, 2805 18th Street, N. W., Washington, D. C.; Mr. Percival B. Coffin, 39 South La Salle Street, Chicago, Illinois; Mr. Harry Harris, Box 123, Eagle Rock, California.

Back Again With Nature

Once more the lakes are open—the bluebirds sing—and God's green mantle has been thrown over the land. Time to get back again with Nature—back to the cabin, back to the fishin' tackle, the old boat, the cracklin' wood fire, and Rustic Hickory Furniture.

Man, oh! Man! what a restful outlook!

The Rustic Hickory rockers around the fireplace; the Rustic Hickory settees and swings on the porch; the Rustic Hickory table and dining room chairs, and the old Rustic Hickory bed, where dreams are scented with the tang of Nature.

Rustic Hickory Furniture is made from second growth hickory poles. Every one of the hundred and thirty styles is the last word in comfort, beauty and durability. This furniture has won a million friends in the past twenty-five years.

Join the ranks. Send for our beautiful catalog. Ask for catalog D.

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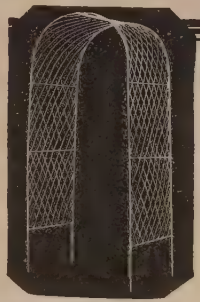
The Pushless Lawn Mower

Operated and propelled by 1 H. P. gasoline motor. Easy pull on starting cord and engine starts. Pull up on clutch control and mower starts. To stop, push down clutch control. Handy lever on handle controls everything. Any one can operate it. Cuts on hill or terrace; heavy or light grass. Circular free. **Power Units, Inc.**, 748 Jackson Street, **Jackson, Michigan**, east of Mississippi river; **Cushman Motor Works**, 1008 N. 21st Street, **Lincoln, Nebraska**, west of Mississippi.



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More Wild Flowers In May Issue

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Checks should be made payable to ALL HALLOWS GUILD, sent to Mrs. G. C. F. Bratenahl, Treasurer, 3525 Woodley Road, Washington, D. C.

Two Big Art Magazines for the Price of One

The American Art Student and Commercial Artist, est. 1916; 30c a copy, $3 a year; largest paid circulation of any art magazine in the world!

Cartoons Magazine, est. 1911; 25c a copy, $2.50 a year. Articles and pictures by America's greatest cartoonists, instruction for amateur artists, cash prize contests, clever humor, etc.

Together these monthlies have a news-stand sales value of $6.60 a year (24 issues); you can get BOTH for only $3 by clipping this adv. and mailing to

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250 W. 49th St. New York City

Trade Rat Tricks

Many are the reported tricks of the trade rat—so called because it frequently steals something but leaves something in place of it, and Mrs. Laura B. Gamet of Altadena, California, adds another bit of evidence on this busy little rodent. The family had moved into a house in South Dakota. Soon after it was discovered that about half of a box of highly-prized, hand-made handkerchiefs was missing, as well as a pink silk needle-book. A few days afterward the rat was discovered carrying apples from the kitchen down cellar and into its home. Mr. Gamet fished into the nest with a wire. Out came the home and the evidence. A white silk handkerchief and a linen one had been cut up fine and put into the nest. Some others had holes in them and the needle-book, with needles missing, also made up a part of the nest. But there were fourteen other handkerchiefs, folded and clean.

A Wise Woodpecker

M. B. Shoults of Madison, Wisconsin, adds another bit of evidence in support of the claim that birds think. Feeding stations and a bird bath, he writes, were provided for a number of bird friends, including one hairy woodpecker. There came a cold spell, however, and the bird bath froze solid and was almost buried in snow. Pans of water put out as substitutes froze immediately. Several of the birds were feeding one cold day when the woodpecker arrived, seemingly hurt or in distress. Straight to the bird bath he went, scattering the snow and finding ice instead of water. He examined the water pans and found the same sad situation. Then, the writer says, the birds flew straight to the house window and clung to the sill looking up at him. The woodpecker tapped the glass twice with his bill and then flew straight back to the bird bath. Needless to say, the bath was filled with water and the snow swept away.

Saving Long-Horns

The agricultural appropriation bill signed by President Coolidge on January 17, carries an item for the purchase and maintenance of a herd of the long-horned, or Spanish breed of cattle, once so numerous in the Southwest, but now threatened with extinction. These are to be maintained on the Wichita National Forest in Oklahoma, according to an announcement made by Col. W. B. Greeley, of the Forest Service. These

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A Play Apparatus

Patented October 23, 1923; March 25, 1924

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Tent makers since 1871

cattle will have for neighbors in an adjoining pasture a herd of buffalos, which is also being maintained by the Government through the Forest Service.

Bird Music Again

Now and then we receive a letter from a member who has only just seen Mr. Nathan's attack upon the music of bird songs and who hastens to relieve his or her feelings. Such comes from E. Chesley Allen of the School for the Blind at Halifax, Nova Scotia, under the title of "A Protest from the North." Mr. Allen writes:

"No music in birds' voices? Sordid thought
Of starveling soul! If thou couldst *really* hear
In our wild northern woods the piping clear
Of the white-throated sparrow, or hadst brought
Attentive ear unto the kinglet's glee,
The crossbill's liquid cadences, the peace
In hermit thrush's song when others cease,
Or the pure "Sweet Spring" of the chickadee!

"No music in birds' voices? Why 'twas such
That drew the ancient prophets and the Child
Of Nazareth, Himself, into the wild,
And sent them back, annointed by the touch
Of rich outpourings from the Master's balm,
Fitter their fellow men to lead or calm."

Correspondence Club

"Is there such a things as a Nature Correspondence Club for adults?" asks Miss Elsie M. Prentice of Utica, LaSalle County, Illinois. Offhand we know of none, but perhaps some of our members do or would be interested in such a circle. Miss Prentice would like very much to get in touch with such a group if one exists, or to join in forming one.

Rain for the Asking

In the February issue there was a brief item and picture showing an overhead plan of watering a million trees, more or less, in a forest tree nursery. The item stated that the device was worked out by forestry experts, but we find that the real credit should go to the Skinner Irrigation Company, manufacturers of a wide variety of sprinklers. The picture used was taken at the United States Forest Service nursery at Monument, Colorado, and shows a Skinner system in operation. It is interesting to know that this system is also successfully used in a number of nurseries maintained by state forestry departments.

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The Ultralens Microscope comes packed in a beautiful Leatherette case with full instructions that any one who can read can understand. Lenses of 125 x and 325 x objectives can be furnished at $1.50 each.

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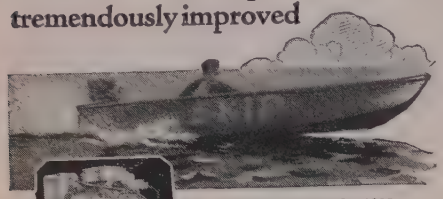

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A State Nature Study Program

By EDITH R. FORCE

Each month, when the material is available, NATURE MAGAZINE will be pleased to publish an article no longer than the following on the work of one important Nature club or group of clubs. It is felt that these brief reviews will, in future years, be somewhat historic in character.

"To vitalize the study of the natural sciences in the High Schools, including Junior High schools, and colleges of Oklahoma, by providing a cooperative, inter-scholastic organization through which member schools, geographically scattered over the state, may exchange natural objects and specimens for scientific study, both living and preserved; assemble a didactic museum; subscribe for officially adopted journals dealing with current phases of natural sciences.

"Minimum stress is to be laid on the central organization. In fact, it is the activity of the member schools which will make the exchange a success. Enthusiasm, wise planning, and orderly directed efforts in the member schools will accomplish wonders. Let the spirit of the great Agassiz, founder of American Natural History, preside. Turn from the books to the open fields, forests and streams of Oklahoma."

This statement sets forth the basis of the organization of the Oklahoma Natural History Exchange, which, after preliminary pioneer work, became a fact in 1926. The dues for initial organization, until Feb., 1927, are $1.50, payable to the treasurer, by each local club. One voting delegate, preferably the faculty sponsor, is allowed each club.

While definite plans have not been formulated as to the means of publishing the local county records of collections of the flora and fauna, yet the approval and cooperation of the Oklahoma Academy of Science indicate that there is a definite scientific work to be accomplished by the local Natural Science Clubs and their sponsors.

Some state affiliation with the International Natural History Exchange, with headquarters at Galileo High School, San Francisco, Calif., is to be desired. This organization, beginning also in 1923, based on such similar ideas, brings the strong conviction that not only as county and state, but internationally there is a need for an organized Junior American Association for the Advancement of Science.

One form of science club organization which has found favor in several schools, was first used by the author in the High School at Ok-

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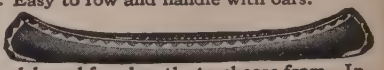

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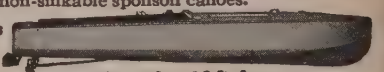

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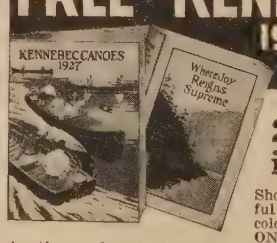
1927 Canoe Catalog



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mulgee. The John Burroughs and Field and Stream Clubs were regular school activities. The John Burroughs consisted of upper-class boys, meeting twice a week, for forty minutes each day, during the regular activity period. The membership of the Field and Stream was limited to the seventh and eighth grade boys and girls, meeting once a week for forty minutes, during the regular activity period.

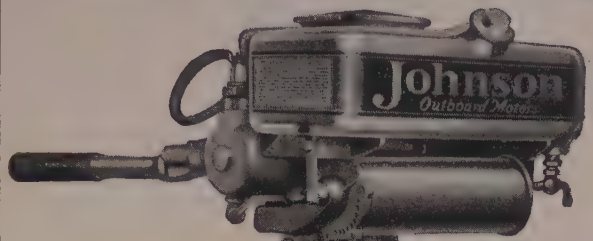
The club programs consisted in demonstrations, lectures, field trips, and work periods, where each student followed his greatest interest. A point system whereby each student measured his interest was worked out, in a *Hand-book of Projects*. The high point winners each semester received special club honors in the form of a specially designed gold or silver pin with initials of the school, John Burroughs' head, made from a special die, and "Activity Honors" on it.

A definite scientific program may be undertaken, as was attempted in Okmulgee, through the making of collections of the local flora and fauna of the county. This in turn was organized into scientific, classified form, sent to various authorities for checking and returned to the local school to be arranged in a working museum, for the natural science students. The records of these collections were compiled, and from time to time published in journals interested in receiving such local lists. As these museum specimens grew in value and interest they were placed in larger state museums, where they might be properly preserved from fire and destruction by insects.

From these and like local efforts grew the desire and need of a united purpose to accomplish definite scientific results now crystallized in the state organization.

WATERWAYS ARE NEW HIGHWAYS OF HAPPINESS

These Exclusive Features ~ have given Leadership to Johnson



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In the 1927 Models, a material increase in power has been secured. A new four-port motor design for the Standard and Big Twins gives a flexibility never before known to outboard motors.

Propulsion efficiency has been increased. A pressure vacuum cooling system has been added. Full pivot steering gives a degree of maneuvering impossible with any other method of steering.

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Select the motor you want at your dealer's store and if you desire, pay for it on the easy payment plan.

Literature will be gladly sent to those interested.

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Hunters, fishermen, favor this model because of its 26-lb. weight. Easily transported anywhere. Attaches to rowboat or canoe. Ideal for dinghy use. Speed range, 1 to 7 m.p.h., depending upon the type of boat used. Priced at $115

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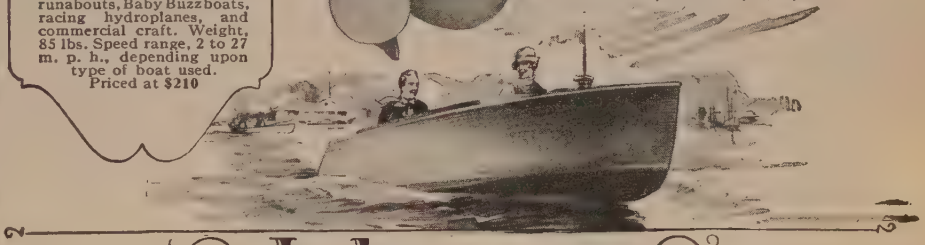
The tourists', fishermen's and cottagers' motor. Ideal for tender use. The lightest weight twin outboard motor made. Weight, 37 lbs. Speed 1 to 13 m.p.h., depending upon type of boat used. Priced at $140

The New Standard Twin
An all-purpose motor. For lake and resort cottagers. For racing, planing-type boats, as well as large rowboats. Weight, 55 lbs. Speed 2 to 22 m.p.h., depending upon type of boat used. Priced at $165

The New Big Twin
The ideal motor for small runabouts, Baby Buzzboats, racing hydroplanes, and commercial craft. Weight, 85 lbs. Speed range, 2 to 27 m. p. h., depending upon type of boat used. Priced at $210



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90% of the annual dues is designated for subscription to the magazine

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April

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April

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No Center Pole—Yet Smooth, Firm, Rigid

This is in all respects the best tent in the world made better by the addition of new features not found in any other tent. Easily erected by one person in five minutes. Big and roomy when set up. Small, compact bundle to carry. Made of first grade 10 oz. U. S. Army Duck, mildew-proofed, water-proofed and finished in rich dark green color. The new storm-proof screened window and sewed-in floor with raised threshold appeals to women because they are absolutely insect-proof The bobbinet door is fitted with zipper fastener, opens or closes by pulling slider up or down. The larger awning provides an extra room. The new roof support forms peak that insures perfect draining. Tent is made in four sizes. Steel tent stakes; awning guy ropes, water-proof carrying bag, everything complete, ready for camping. The most compact, complete, convenient and highest grade tent Stoll has ever made.

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A real quality tent made of high grade water-proofed and mildew-proofed dark green tent material, large awning, tent door, screen door, rain-proof window, sewed-in floor, folding steel center pole, reinforced peak, square hips. Easily set up in three minutes and very compact for carrying. Roomy 9x7 foot size at the record low price for this grade tent of - - - - **$39.50**

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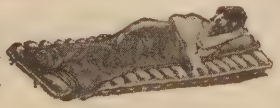

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SOME INTERESTING APRIL OBSERVATIONS

(Continued from page 234)

drowned him in water had he not retired. History has repeatedly shown that majorities are not always right, that majority votes do not alter scientific facts. There were communities which would have voted overwhelmingly that the earth was flat but that didn't make it so. There are communities to-day which will say that they should be permitted to engage in spring shooting of wild fowl in defiance of the findings of those engaged in the study of those birds and interested in preventing them from becoming exterminated or seriously reduced in numbers. There are to-day those who will contend that because it seems to offer profit for their own pockets certain areas which serve as the breeding grounds for birds should be drained or otherwise altered in spite of the fact that the grounds as they are are serving in their most useful capacity. A game warden in the state of Washington is reported to have introduced 1,000 bullfrogs from Missouri and announced an open season in two years because "they will have propagated tremendously." This was done in ignorance of the fact that bullfrogs remain nearly two years in the tadpole stage.

What evidence can you find in your own community of inexcusable loss through failure of those holding influential political positions to recognize the laws of Nature? Is the opening day of the trout season in accordance with the biological needs of the fish? That is, are any of them breeding during the open season? Do you in your rambles find any steel traps which have obviously been abandoned though set, and remain a threat to the laws requiring that animals should be killed only in a humane manner? Do you find evidence that hunters who have been engaged in so-called vermin hunts have defeated the purpose of the game laws and killed game as well? Is there a law in your community which protects wild life from the depredations of abandoned cats or pet cats? Is the existence of that law generally known and is it obeyed?

Of course we cannot leave April without reference to Easter. We may

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E. N. MATHEWS, Pres.
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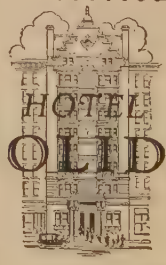

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think of it, if we wish, in its religious significance or if we prefer we may associate it with Easter eggs and Easter bunnies. To be sure both eggs and bunnies may be found during April, so if you wish you may hunt for and find eggs and rabbits' nests, though the eggs will not be in the rabbit's nest nor will they be the rabbit's eggs. Many of our little cottontail rabbits will have had a litter of young tucked away in a fur or grass-lined nest in April. I found one in my front yard a year ago at about the same time a crow did. As a matter of fact I probably would not have found it had not I noticed the crow make the discovery and so went out to investigate for myself. Are young cottontails born blind like kittens or can they see shortly after birth? Are the ears of a young cottontail proportionately larger or proportionately smaller than those of his parents? Since you can't find rabbit eggs during this month of Easter what kind of eggs can you find? Are robins, for example, laying their eggs by the end of the month? How about the chickadees and owls in this respect? Since Easter eggs are variously colored you might like to find out whether or not you can make any reasonably safe generalization as to the color of eggs to be found in nests made in holes. Many forms of life will be coming back to life in a typically Easter spirit during April and should make the month truly one of rejoicing for all Nature lovers.

THOR—A DESERT TORTOISE

(Continued from page 252)

or he might have been the mascot of some of those famous Forty-niners. Who knows?

We keep him out doors all summer tied, by a wire in the hole in his shell, to a tree in the garden. He eats clover leaves and lettuce and dandelions. In the winter he has the run of the house. He spends a lot of his time in a corner fast asleep, only coming out occasionally to eat a bit of lettuce, or to sit on the register and warm himself.

He is a source of everlasting wonder to the dog and cats. They watch him and if he has a string dragging, they will play with him. He does not seem to mind it a bit. If a friend who knows turtles is right, Thor will outlive all of us and become a family heirloom—and a live one at that.

Advertising in Nature Magazine Pays

THE land of mellow sunshine and invigorating climate. The land of mystic magnificence—of towering mountains, majestic waterfalls, beautiful rivers and verdant veld. The land of modern cities and native Kraals.

The land of beautiful flowers, sylvan glades, botanical gardens and primeval forests. Where you can motor over fine roads or travel by fast luxurious trains. Where you can see—

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Questions and Answers

The American Nature Association will be glad to answer each month such questions as its members ask about Nature.

QUESTION: *Please tell me about Dutchman's Breeches (Dicentra cucullaria).—G. H.*

ANSWER: Dutchman's Breeches is the name given to a beautiful little spring flower found in the woods and among rocks. The leaves are finely cut and grow on long stems, and the flowers are white, tipped with yellow. The corolla is of four petals, in pairs, and these combine to form a heart-shaped flower, growing in a one-sided raceme.

QUESTION: *While riding in the Canadian Rockies last summer, I saw a green mouse. I am interested in finding out whether this is a recognized species or a mutant. The guide who had been in these mountains all his life had never seen one. —G. I. F-G.*

ANSWER: The only animal that we can think of as a possibility is the jumping-

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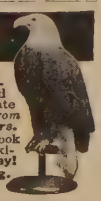

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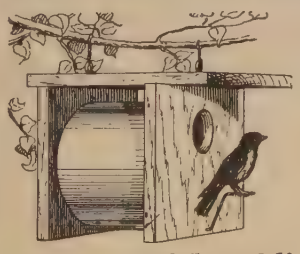

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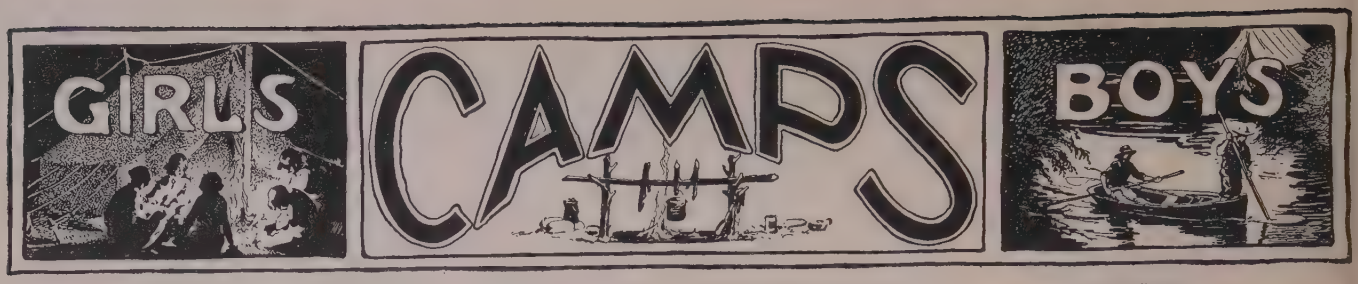

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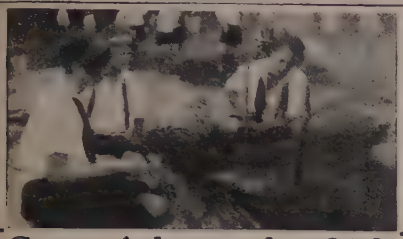

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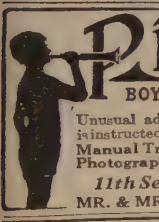

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We are able to announce at this time that **DR. WILLIAM G. VINAL** has been attached to the staff of the Association and will give his entire summer to NATURE SERVICE FOR CAMPS. This service will be in the form of a Lecture Tour. Dr. and Mrs. Vinal have planned to visit nearly fifty camps. We regret that only a limited number of select camps can be included in the itinerary but feel that a day spent in camp will be much more effective than a hasty visit.

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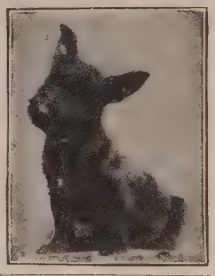

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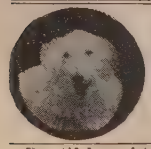

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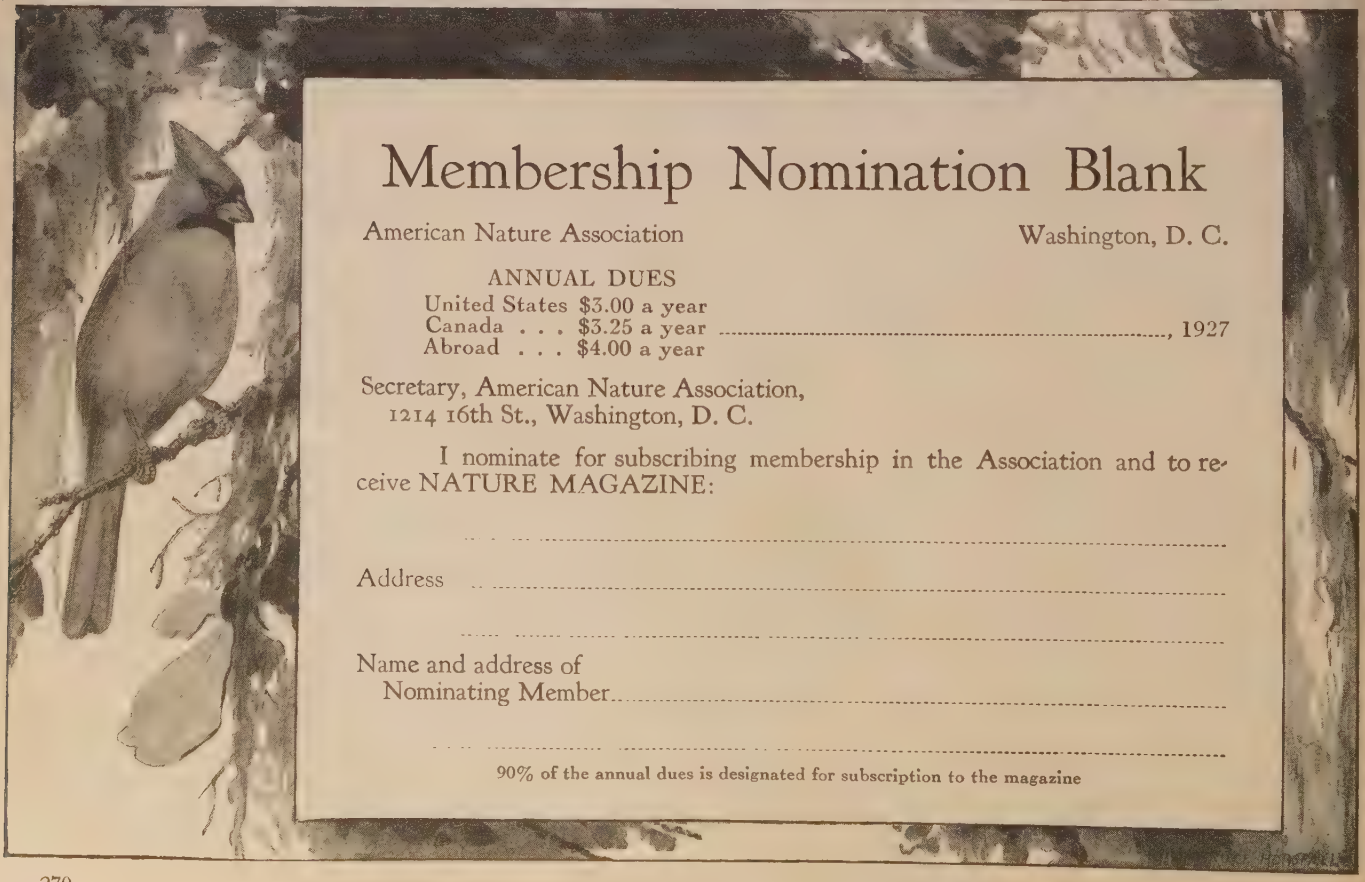

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Name and address of Nominating Member.....

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"IN OUR DAY AND GENERATION"

"Let us develop the resources of our land, call forth its powers, promote all its great interests, to see whether we also, in our day and generation, may not perform something to be remembered."

The headline that greets the tree planting army this month was not written yesterday or last week. It was uttered by one of America's greatest orators almost a century ago. The man was Daniel Webster and his thought on resources is just as timely to-day as the cartoon by Kenwood you see on this page.

When Webster spoke on the importance of natural resources he had never heard of American Forest Week. This year it is April 24. Down through the years with pen and voice there has been a little something done in behalf of our forests. The situation became so acute that an annual educational drive was instituted in an endeavor to turn the thought of the nation to the need of putting our millions of acres of idle land to work growing trees. The center of our lumber wealth is receding from our great manufacturing centers. Long hauls mean high freight rates and they add to the cost of living.

The greatest force in the world to-day is public opinion. This was recognized by Abraham Lincoln who said: "Public Sentiment is everything. With public sentiment nothing can fail; without it, nothing can succeed. Consequently he who molds public sentiment goes deeper than he who enacts statutes or pronounces decisions. He makes statutes and decisions possible or impossible to be executed!" To create a public sentiment on behalf of trees is the aim of the American Tree Association. Charles Lathrop Pack, the president, has published a half million copies of the Forestry Primer and has distributed them to the schools in time for American Forest Week. This brings the total of this publication to one million three hundred thousand copies. Educational and forestry departments have made an intensive distribution of this plainly-phrased booklet on the forestry situation.

Teachers everywhere are using the Primer in project work whereby the pupil in English, public speaking, essay writing and other branches takes the facts in the Primer and molds them to the lesson in hand. Thus the pupil does his work and gets the forestry facts at the same time.

Not only must public sentiment be aroused but much study must be given to handling the forests. Endowment of a research professorship in forest soils in Cornell University by a gift of $130,000 is announced by President Livingston Farrand from the Charles Lathrop Pack Forestry Trust, founded by Mr. Pack. The announcement followed one by Chancellor Charles W. Flint of Syracuse University of the gift of a demonstration forest by Mr. Pack who also has given land to Yale and the University of Washington, at Seattle. The latest gift is in trust to the University for the use and purpose of the New York State College of Forestry at Syracuse University, and will be the largest demonstration forest in the United States. It is situated on the main automobile route between New York and Montreal and is north of Glens Falls in the well-known and beautiful Lake George section of the Adirondacks. This will make an outdoor museum exhibiting forest operations in all their details, which will, in the opinion of foresters, be one of the most unusual sight-seeing features along any main highway.

At Cornell the research work will be done in the New York State College of Agriculture, and the appointment of the professor will be announced shortly, President Farrand said. The Chair will be named for Mr. Pack.

"Announcement of an endowed research professorship in Forest Soils at Cornell University is very encouraging to all of the forestry interests of the United States," said Col. W. B. Greeley, of the U. S. Forest Service, upon reading the announcement by Dr. Farrand.

"There is need for greatly extended research in many directions in order to establish a scientific basis for American forestry.

"The rapid expansion of timber growing in this country, including industrial forestry and farm forestry, makes it peculiarly important that we should develop with the least possible delay the scientific knowledge necessary to guide this important economic and public development along sound lines.

"Cornell University is to be congratulated on the opportunity afforded it to develop this phase of forest research; and its benefits will extend to all of the agencies interested in developing American silviculture and in the productive use of our forest land."

So while the forester finds new things the tree planter must go on planting not only trees but public sentiment on behalf of tree planting. The centennial of Arbor Day comes in 1972. The thing to do is to celebrate that centennial now by planting trees. Let the tree planting army then act in "our day and generation."

We Need a New Bucket

—Kenwood in the Durham, N. C., *Sun*.
The Fourth Estate **called this the best cartoon of the week.**

How The Outstanding Book Is Chosen Each Month

THE Book-of-the-Month Club is a service, which prevents busy or procrastinating people from missing the outstanding new books that they want to read. It has engaged a group of five critics to select the most readable and important book each month—Henry Seidel Canby, chairman, Heywood Broun, Christopher Morley, Dorothy Canfield and William Allen White. The book selected each month is sent to all subscribers, unless they want some other book instead. They pay the same price that the publisher himself charges. This unique service has been very widely praised, and over 40,000 discriminating readers have now subscribed to it. It has, however, met with an interesting criticism in some quarters. This is: "I don't want anyone to select what books I shall read. I want to choose my own books." What ground is there for this objection?

HAVE you ever given thought to the considerations that *now* move you in deciding to read any book? You hear it praised by a friend. Or you see an advertisement of it in a newspaper. Or you read a review of it by some critic, whose account of it excites your interest. You decide you *must* read that book. Note, however, what has happened: it is always recommendation *from some source*, that determines you to read it. True, your choice is completely free, but you exercise your choice among *recommended* books.

Observe what follows, after you are thus influenced, quite legitimately, to read a certain book. Sometimes—but sometimes only—you go right out, buy it and read it. More often, however, if you are the average person your fine intention goes to seed. For one reason or another, you neglect to get it. You hear other intelligent people discussing it; you get annoyed with yourself; you say: "I must not continue to forget to get that book!" But in the end—all too frequently—you miss reading it altogether; you confess sadly to someone that you "never got around to it."

How the "Book-of-the-Month" is chosen

Now, what would be the difference, were you a Book-of-the-Month Club subscriber? Strange to say, upon analysis, you will find that in practice *you would be enabled to exercise a far greater liberty of choice*, and above all you would actually *get* the books—without fail—that you decide to read. How?

All the new books each month are submitted for consideration by the publishers. Necessarily there is at first some elimination; certain books are obviously designed for special classes of readers. Usually, each month, the choice narrows among from twenty to thirty books. A copy of each one of these books is sent to each member of the Selecting Committee. There is no discussion. Each one reads the books independently, and gives them a rating in the order *in which he himself prefers them*. The book which emerges with the highest total rating becomes the "book-of-the-month".

What is the effect of this method of independent voting? When a majority of five critics (of such good judgment and such varying taste) award a book first place among twenty or thirty considered, clearly it is *likely* to be a book you would not care to miss. Certainly, it will have as strong recommendation behind it as behind the books you are influenced to read through other sources.

Nevertheless, tastes differ. This combined vote of the judges is not infallible, and they would be the last ones to consider it so. Their choice simply represents a sensible method of arriving at one outstanding book each month—and it works! The books they choose *are* outstanding; but nobody compels you to like them, nor even to read them. Your own taste is considered, for you, quite as sacred as theirs.

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Accordingly, you are not compelled, willy-nilly, to accept the choice of our Committee. Before the "book-of-the-month" comes to you, you receive a carefully written report describing the sort of book it is. If you don't want it, you specify that some other book be sent instead. You make your choice from a list of other important new books, which are recommended by the Committee, *and carefully described in order to guide you in your choice.* If, however, you decide to let the "book-of the-month" come and then find you are disappointed, *you can still exchange it at that time for any other book you prefer.*

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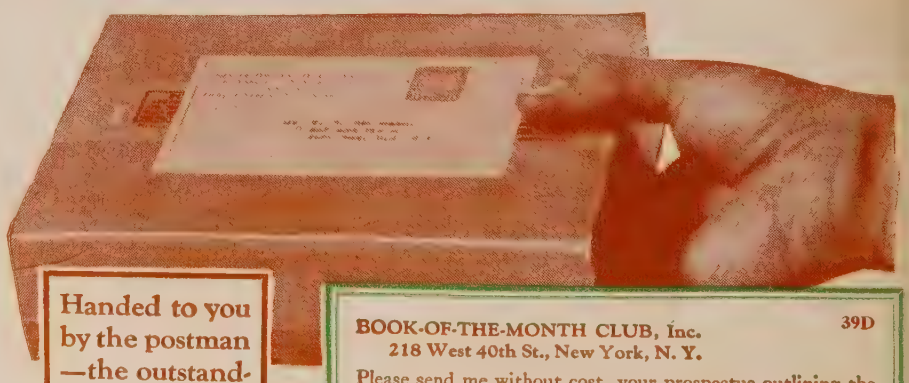

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WHAT I THINK OF PELMANISM - By Judge Ben B. Lindsey

PELMANISM is a big, vital, significant contribution to the mental life of America. I have the deep conviction that it is going to strike at the very roots of individual failure, for I see in it a new power, a *great* driving force.

I first heard of Pelmanism while in England on war work. Sooner or later almost every conversation touched on it, for the movement seemed to have the sweep of a religious conviction. Men and women of every class and circumstance were acclaiming it as a new departure in mental training that gave promise of ending that *preventable* inefficiency which acts as a brake on human progress. Even in France I did not escape the word, for thousands of officers and men were *Pelmanizing* in order to fit themselves for return to civil life.

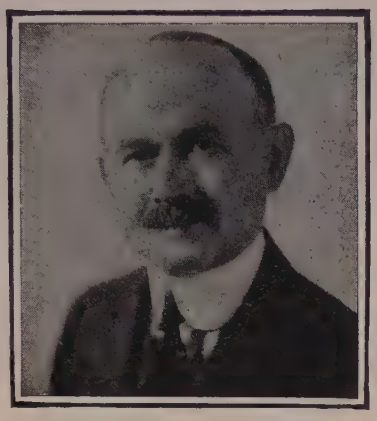
When I learned that Pelmanism had been brought to America, by Americans for Americans, I was among the first to enroll. My reasons were two: first, because I have always felt that every mind needed regular, systematic and scientific exercise, and, secondly, because I wanted to find out if Pelmanism was the thing that I could recommend to the hundreds who continually ask my advice in relation to their lives, problems and ambitions.

Failure is a sad word in any language, but it is peculiarly tragic here in America, where institutions and resources join to put success within the reach of every individual. In the twenty years that I have sat on the bench of the Juvenile Court of Denver, almost every variety of human failure has passed before me in melancholy procession. By *failure* I do not mean the merely criminal mistakes of the individual but the faults of training that keep a life from full development and complete expression.

It is to these needs and these lacks that Pelmanism comes as an answer. The "twelve little gray books" are a remarkable achievement. Not only do they contain the discoveries that science knows about the mind and its workings, but the treatment is so simple that the truths may be grasped by anyone of average education.

In plain words, what Pelmanism has done is to take psychology out of the college and put it into harness for the day's work. It lifts great, helpful truths out of the back water and plants them in the living stream.

As a matter of fact, Pelmanism ought to be the beginning of education instead of a remedy for its faults. First of all, it teaches the science of self-realization; it makes the student *discover* himself; it acquaints him with his sleeping powers and shows him how to develop them. The method is *exercise*, not of the haphazard sort, but a steady, increasing kind that brings each hidden power to full strength without strain or break.



JUDGE BEN B. LINDSEY

Judge Ben B. Lindsey is known throughout the whole civilized world for his work in the Juvenile Court of Denver. He says: "The human mind is *not* an automatic device. It will *not* 'take care of itself.' Will power, originality, decision, resourcefulness, imagination, initiative, courage—these things are not gifts but results. Every one of these qualities can be developed by effort, just as muscles can be developed by exercise."

The human mind is *not* an automatic device. It will *not* "take care of itself." Will power, originality, decision, resourcefulness, imagination, initiative, courage—these things are not gifts, but results. Every one of these qualities can be developed by effort just as muscles can be developed by exercise. I do not mean by this that the individual can add to the brains that God gave him, but he can learn to make use of the brains that he has instead of letting them fall into flabbiness through disuse.

Other methods and systems that I have examined, while realizing the value of mental exercise, have made the mistake of limiting their efforts to the development of some single sense. What Pelmanism does is to consider the mind as a whole and treat it as a whole. It goes in for mental team play, training the mind as a unity.

Its big value, however, is the instructional note. Each lesson is accompanied by a work sheet that is really a progress sheet. The student goes forward under a teacher in the sense that he is followed through from first to last, helped, guided and encouraged at every turn by conscientious experts.

Pelmanism is no miracle. It calls for application. But I know of nothing that pays larger returns on an investment of one's spare time from day to day.

(Signed) BEN B. LINDSEY.

Note: As Judge Lindsey has pointed out, Pelmanism is neither an experiment nor a theory. For almost a quarter of a century it has been showing men and women how to lead happy, successful, well-rounded lives. 600,000 Pelmanists in every country on the globe are the guarantee of what Pelman training can do for *you.*

No matter what your own particular difficulties are—poor memory, mind wandering, indecision, timidity, nervousness or lack of personality—Pelmanism will show you the way to correct and overcome them. And on the positive side, it will uncover and develop qualities which you never dreamed existed in you. It will be of direct, tangible value to you in your business and social life. In the files at the Pelman Institute of America are hundreds of letters from successful Pelmanists telling how they doubled, trebled and even quadrupled their salaries, thanks to Pelman training.

"Scientific Mind Training" is the name of the absorbingly interesting booklet which tells about Pelmanism in detail. It is fascinating in itself with its wealth of original thought and clear observation. "Scientific Mind Training" makes an interesting addition to your library.

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The Legend of the Narcissus

In the 20th century, he might be a movie star, but in the age of Greek Mythology he was forced to pay the penalty of Death, and all because he was too good looking. This unfortunate young god, Narcissus, was the son of the River God, Cephissus, and the nymph, Leiriope. It was prophesied that Narcissus would live to a respectable old age provided he never looked on his own features. A safe restriction, for there were no looking glasses around the Cephissus household, but unfortunately Narcissus wandered into a sylvan glade with crystal clear pools and streams. In one of these he became infatuated with the reflection of his own features. In defense of Narcissus one legend records that he thought it was the image of his beautiful sister, and that she would soon return to life. Heroic like, he waited for this event, and refused to eat or sleep.

Tripping into the glade one day came a young nymph, Echo, a beautiful, and a fit companion for most any young god. She spied Narcissus. "Ah, my hero!" But Narcissus was in no frame of mind to reciprocate nymphaic affections. Stung by his indifference, Echo complained to Nemesis, the Goddess of Vengeance—who somehow seems to have been mother protector for jilted nymphs—that Narcissus was so stuck on himself that he would not even give her a look. Nemesis got busy and so persecuted Narcissus that he died waiting for his sister in the forest. But Nemesis too was so impressed with the features of the young god that it was decreed that a Springtime flower should perpetuate his name forever.

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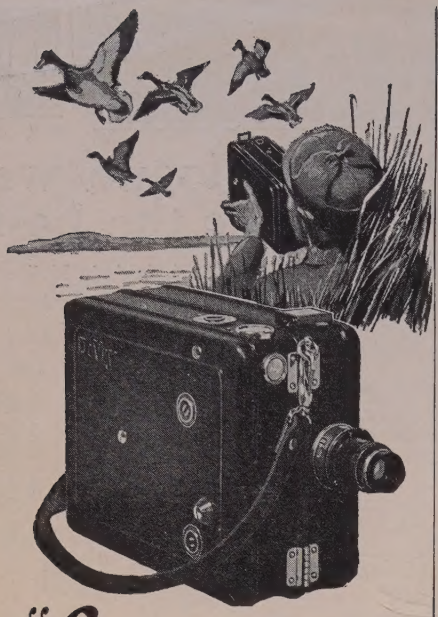

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Much-Needed Volume

There have been anthologies of verse without end, useful ones and useless ones, but there has long been a crying need for an anthology of poetry of wild life. At last we have it in *Poetry's Plea for Animals*, and it is a volume which should be welcomed with enthusiasm in many quarters. It is the work of Frances E. Clarke with an introduction by Edwin Markham, and the publishers are Lothrop, Lee and Shepard Company of Boston. A subtitle of the book describes it as "an anthology of justice and mercy for our kindred in fur and feathers", and the anthology has adopted this viewpoint. Miss Clarke, in her work of assembling the poems, discovered that before the middle of the Eighteenth Century no poet seems to have voiced any humane sentiment for the wild world. The age of romanticism wrought a change and since its dawning the real humane verse that Miss Clarke has collected came into writing.

This volume gives testimony to a long and careful search of existing poetry. The scope of its subject matter is wonderfully varied. It is a book for all who love poetry and for all who love wild life; a valuable source book as well as a delightful volume for the library table. It is worth the three dollar price asked for it, and the American Nature Association is delighted to have it in its library and to know that the work has been done and well done.

"Kangaroo-Land"

Under this title Captain Kilroy Harris has assembled into a modest but interesting volume a variety of glimpses of Australia. Known widely for his travel talks and Nature lectures and for his radio broadcasting, Captain Harris has a large following. Into this book, which is being sold by the author at one dollar and can be ordered by addressing P. O. Box 362, Cleveland, Ohio, has put the best of his many interesting pictures and only the most essential and entertaining text.

Raising Rabbits

Rabbit raisers, prospective and present, will find very valuable Leaflet Number 4 of the United States Department of Agriculture, entitled *Raising Domestic Rabbits*. It is the work of D. Monroe Green and is available from the Department as long as the supply lasts.

What of the Universe?

The history of scientific thought, viewed in the light of the present, is a fascinating subject. We look with an amused smile at the first automobile and the first telephone, but they were fundamental. It is the same with thoughts, and on such is based *Fundamental Concepts of Physics* by Paul R. Heyl, physicist of the U. S. Bureau of Standards. It is simply-written and deals

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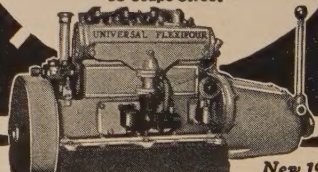

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with the stuff of which the universe is made and what our ideas of it have been and now are. The book is published by Williams and Wilkins Company of Baltimore and sells for two dollars.

Fishes at Home

A distinct addition to the literature on home aquaria and their management comes from the pen of Ida M. Mellen of the New York Aquarium and the presses of Dodd, Mead and Company, 443 Fourth Avenue, New York. It is a handy little volume with the title *Fishes in the Home*, and sells for $1.75. The author has divided the book into two parts, dealing in the first section with the more common types of fishes, aquarium plants and general care. In the second part she takes up the exotic fishes, the salt water aquarium, the construction of a small aquarium and garden pools. Altogether it is a most helpful and, certainly, a most authoritative volume.

Modern Astronomy

Through what vicissitudes of study and reasoning has astronomical knowledge had to pass to reach its position of today? This is admirably answered in a small volume entitled *Modern Astronomy* brought out by the American Branch, Oxford University Press, New York. It is the work of Hector MacPherson and is not only an exceedingly illuminating production but an extremely readable one as well. The price is two dollars.

Minnesota Geography

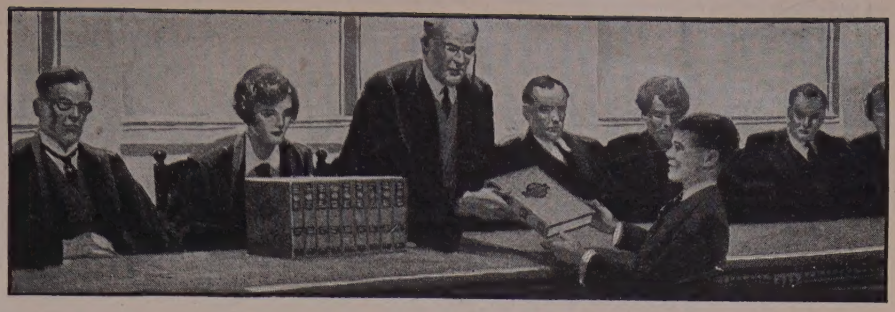
Under the title of *The Story of the North Star State* Daniel E. Willard has assembled into one volume a mass of material about the State of Minnesota that is nothing short of remarkable and should make every Minnesota citizen proud. We do not see how any school in the state can avoid having it, in its library at least, as a reference book. His volume is well illustrated. It is distributed by Mr. Willard himself at a price of $2.50 from St. Anthony Hill Station, Saint Paul, Minnesota.

On Garden Books

Knowing where to go for information is a valuable faculty to possess and Mary Evans has made this easy in horticulture by the compiliation of *Garden Books, Old and New.* A variety of titles with brief descriptions and other pertinent data have been assembled and brought out in a handy little volume by the Pennsylvania Holticultural Society, and recommended by that organization.

The Old Stag

We have had the pleasure in the past of reviewing two volumes of Mr. Henry Williamson's Nature essays. Now a third comes to hand from the presses of E. P. Dutton and Company, 681 Fifth Avenue, New York City. The title is *The Old Stag* and in this latest volume the author has maintained, if not surpassed, the charm of its predecessors. There are twelve stories of the wild life of the English countryside, —fascinating and charming stories, beautifully written. The book is listed at $2.50.



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THE American Library Association, whose business it is to determine the actual value of books through reports of librarians, is considered the Supreme Court on Books. In its official publication, *The Booklist*, it gives The World Book unqualified recommendation and calls it "best of its type."

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